The PHOTOFACT Servicer

SET 405 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ JULY 1, 1958

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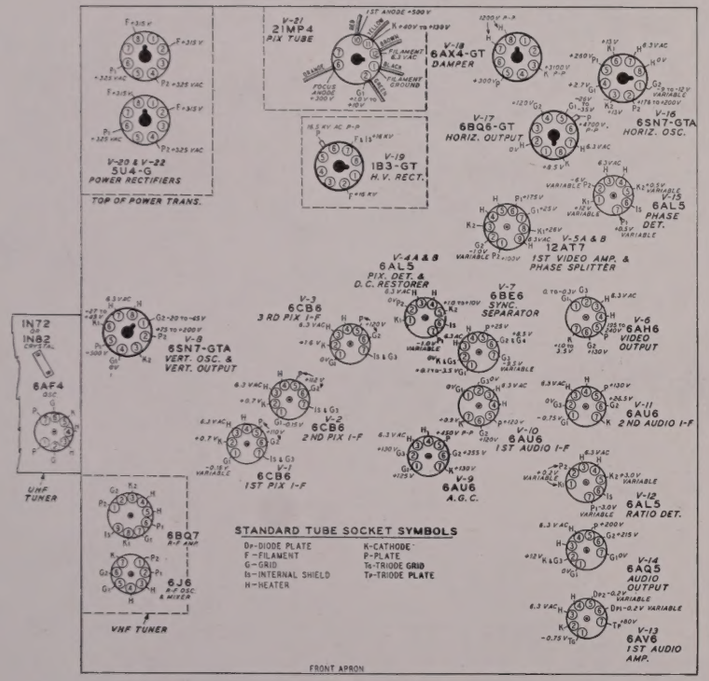
The service information in this Servicer provides data on models which we have been unable to present in PHOTOFACT Folders. The receivers are not in current production; a requirement for PHOTOFACT coverage, and we are therefore presenting schematics and supplementary data that will be of assistance when servicing these models.

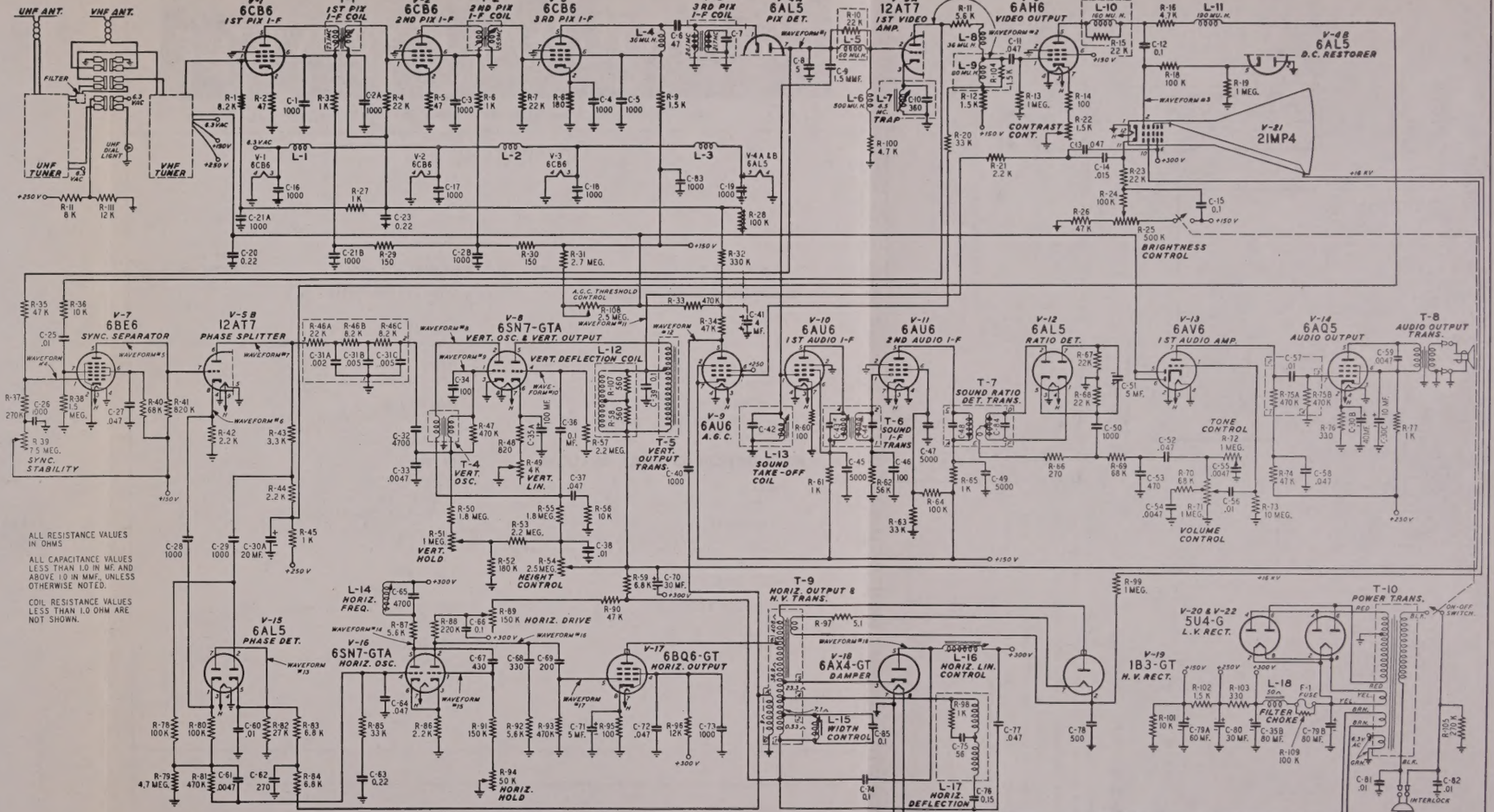
FIRESTONE MODEL 13-G-135
CODE No. 334-3-MS39B/5A6A



Bottom Socket Voltages

STANDARD TUBE SOCKET SYMBOLS

D=DIODE PLATE	K=CATHODE
F=FILAMENT	P=PLATE
G=GRID	Ts=TRIODE GRID
Is=INTERNAL SHIELD	Tp=TRIODE PLATE
H=HEATER	



PRODUCTION CHANGES

There are two different ratio detector transformers (T-7) used in these receivers, Part Numbers 9A2269 and 9A2295. The T-7 circuit shown in this schematic diagram covers the 9A2269 ratio detector. Receivers using the 9A2295 ratio detector can be identified by the following changes:

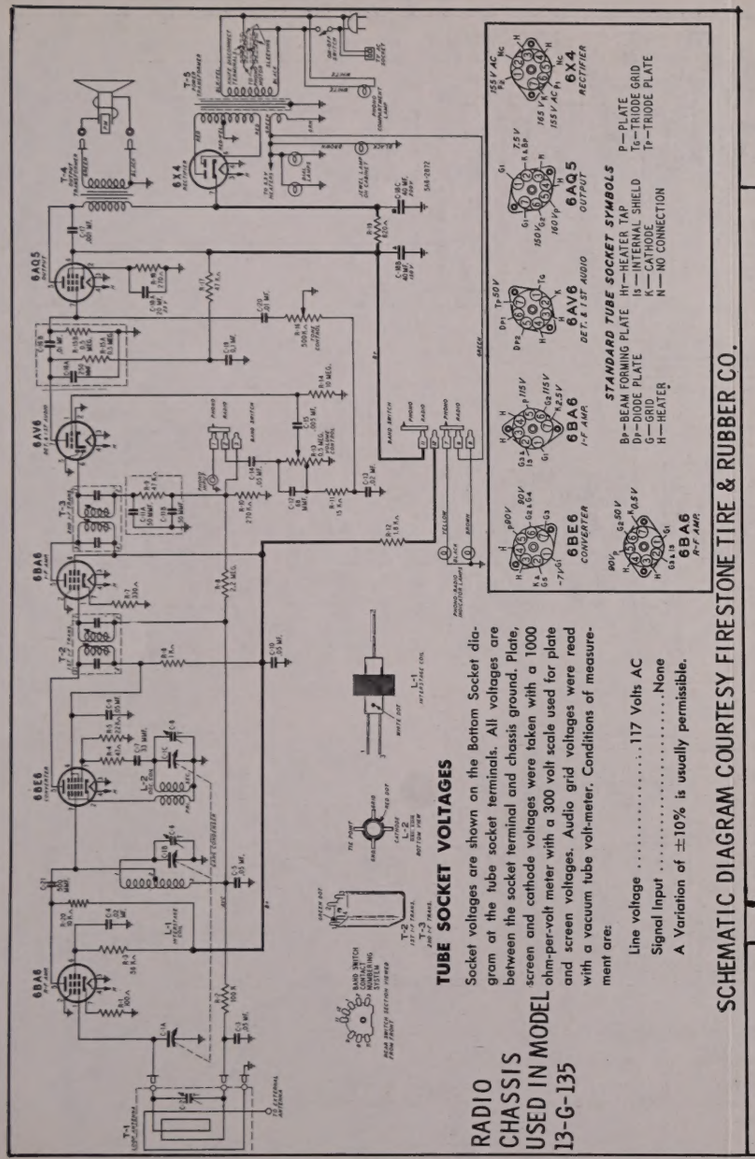
C-50 becomes 47X570 330 mmf molded mica condenser

R-64 becomes B84333 33K ohms 0.5 W carbon resistor

R-67 } become B83103 10K ohm 0.5 W carbon resistors
R-68 }

In addition, the 9A2295 ratio detector has terminals with numerical identification (1, 2, 3 etc.) whereas the 9A2269 ratio detector has terminals with alphabetical identification (A, B, C etc.)

SCHEMATIC DIAGRAM COURTESY FIRESTONE TIRE AND RUBBER CO.



SCHEMATIC DIAGRAM COURTESY FIRESTONE TIRE & RUBBER CO.

RADIO CHASSIS USED IN MODEL 13-G-135

TUBE SOCKET VOLTAGES

Socket voltages are shown on the Bottom Socket diagram at the tube socket terminals. All voltages are between the socket terminal and chassis ground. Plate, screen and cathode voltages were taken with a 1000 ohm-per-volt meter with a 300 volt scale used for plate and screen voltages. Audio grid voltages were read with a vacuum tube volt-meter. Conditions of measurement are:

Line voltage .....117 Volts AC
Signal Input .....None
A Variation of ±10% is usually permissible.

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TRUETONE D3715A	405-15
WESTINGHOUSE H-435T5A, H-437T5A, H-438T5A (Ch. V-2390-3)	405-16

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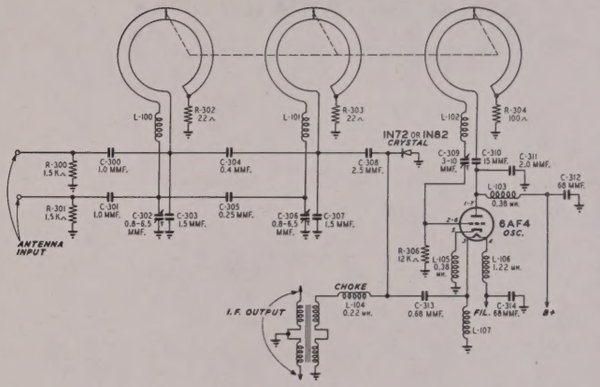
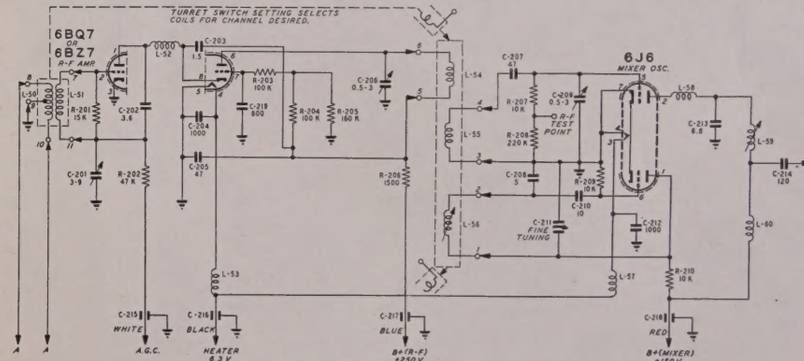


UHF Tuner Schematic Diagram.



Tuner Schematic Diagram.

PHOTOFACT* Folder

*TRADE MARK

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

ADMIRAL MODELS P14D11, 12, 13, 14, PA14D11, 12, 13, 14 (Ch. 16H1, 16AH1)

ADMIRAL MODELS P14D11, 12, 13, 14, PA14D11, 12, 13, 14 (Ch. 16H1, 16AH1)

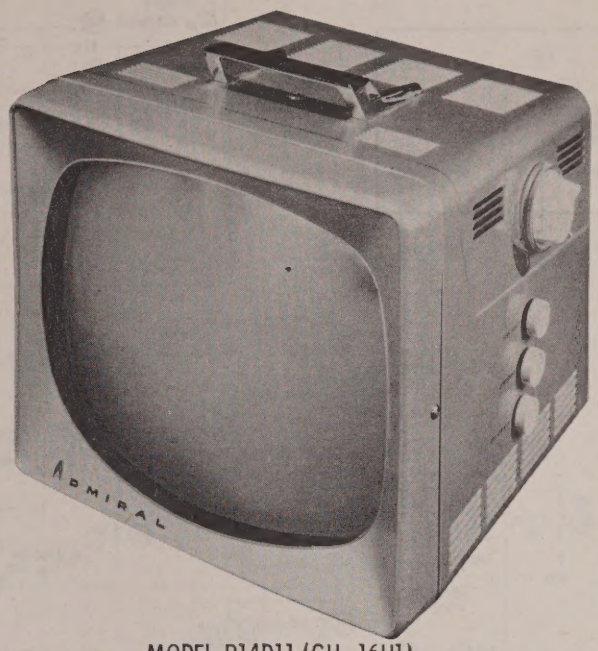
DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 5 push-on type knobs from the side.
2. Remove the metal screws holding the rear cover. Remove the rear cover.
3. Remove 4 metal screws holding the front. Remove the front.
4. Remove 1 screw from the top (located under handle).
5. Remove tuner antenna leads.
6. Remove 8 metal screws holding the chassis to the cabinet.
7. Remove the chassis from the front.

CAUTION NOTE

ONE SIDE OF AC LINE CONNECTED TO CHASSIS
Care should be exercised when connecting test equipment or physically contacting the chassis.



MODEL P14D11 (CH. 16H1)

TRADE NAME	Admiral	MODELS	CHASSIS
		PA14D11, PA14D12, PA14D13, PA14D14	16AH1
		P14D11, P14D12, P14D13, P14D14	16H1
MANUFACTURER	Admiral Corp., 3800 W. Cortland St., Chicago 47, Illinois		
TYPE SET	Television Receiver		
TUBES	Sixteen		
POWER SUPPLY	110-120 Volts AC, 60 Cycle	RATING	130 Watts, 1.32 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF,	Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)	

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF Oscillator is possible by removing the Channel Selector and Fine Tuning knobs. Set the Fine Tuning at the center of its range. The adjustments are accessible, one at a time, as the Channel Selector is rotated. Adjust for best picture and sound. NOTE: Start with lowest channel first. When 2 slugs are visible thru 2 of the 3 holes adjust top slug.

PICTURE TUBE SAFETY GLASS CLEANING

Remove 4 metal screws holding the front. Swing front out at the bottom and up to remove.

SPECIAL ADJUSTMENTS

A. Focus
The focus may be varied in steps by the position of a plug in the Focus Adjustment board.

B. Super Range Finder
The Super Range Finder (R7) is adjusted to improve reception in fringe areas and areas where interference is present. The Super Range Finder control should be turned fully counterclockwise and left there if satisfactory pictures can be obtained in this position. Where the signal strength is weak, turn the control clockwise until the picture is satisfactory. White flashes and snow can sometimes be minimized by carefully adjusting the Super Range Finder. Keep this control set as far counterclockwise as possible, consistent with satisfactory picture, to prevent overloading or excessive contrast.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

The Horizontal Frequency coil is used as the Horizontal Hold control. Adjust the Horizontal Hold until the picture synchronizes horizontally. (For location, see tube placement chart.)

FUSE DEVICE

A 7.5Ω fusible resistor (R94) is used for low voltage power supply protection. (For location, see tube placement chart.)

CENTERING

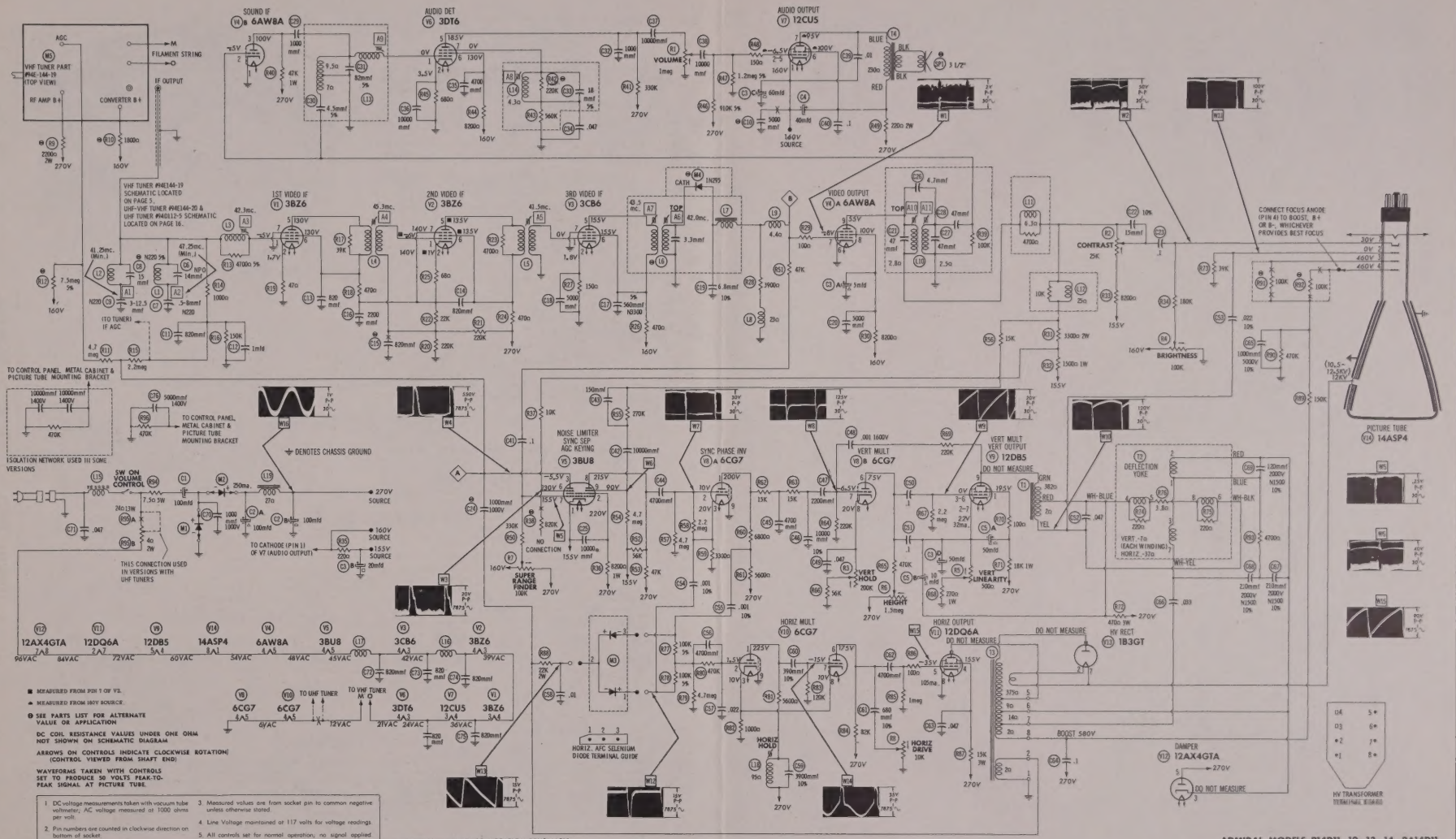
Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America

H524

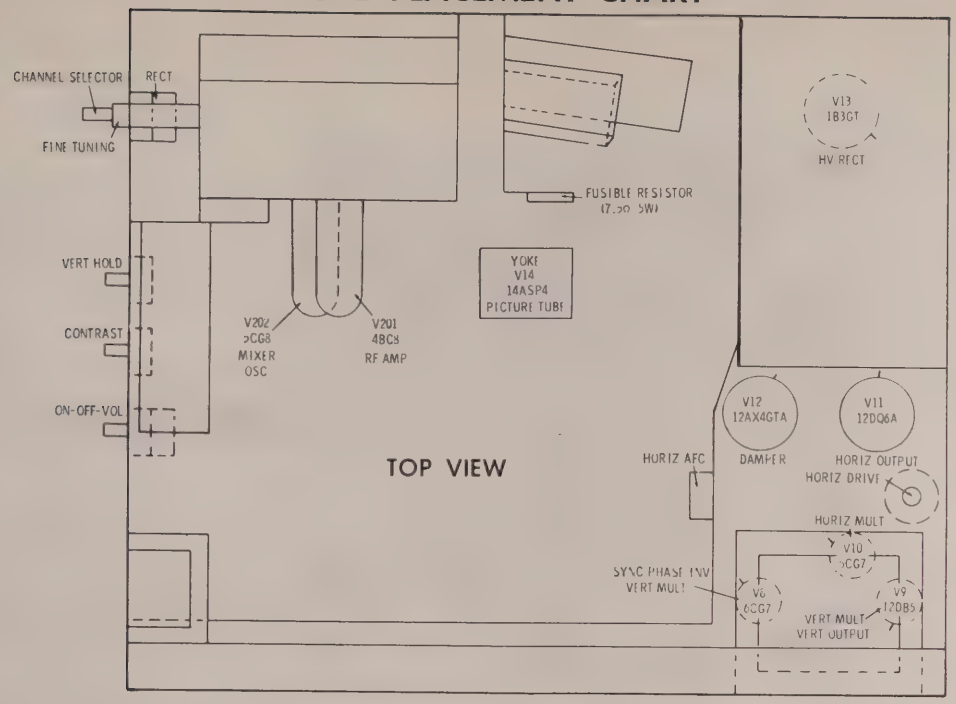
SET 405 FOLDER 1

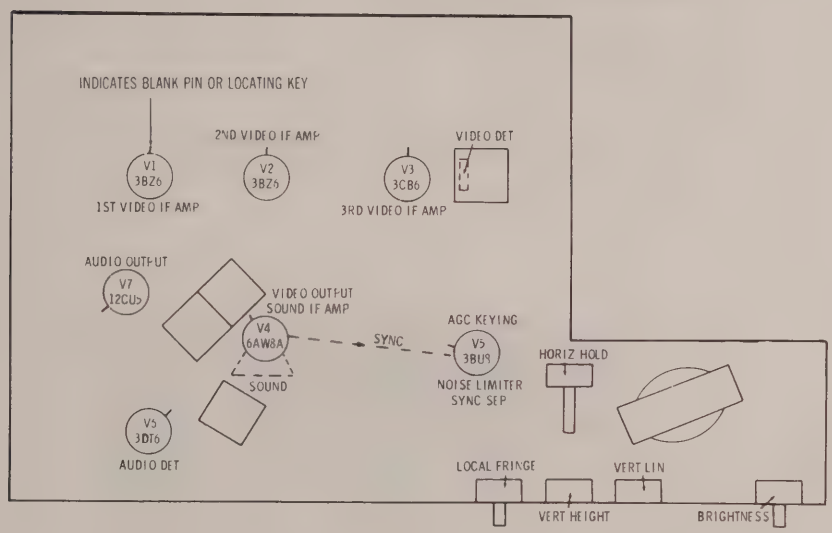

SOUND IF
H1 6AW8A
AUDIO DET
V6 3DT6
AUDIO OUTPUT
V7 12CU5
VOLUME
1meg
VHF TUNER PART #NE-144-19 (TOP VIEW)
AGC
FILAMENT STRING
IF OUTPUT
RF AMP B+
CONVERTER B+
VHF TUNER #NE144-19 SCHEMATIC LOCATED ON PAGE 5.
UHF-VHF TUNER #NE144-20 & UHF TUNER #40D112-5 SCHEMATIC LOCATED ON PAGE 16.
1ST VIDEO IF
V1 3BZ6
2ND VIDEO IF
V2 3BZ6
3RD VIDEO IF
V3 3CB6
VIDEO OUTPUT
H4 A 6AW8A
CONTRAST
25K
BRIGHTNESS
100K
CONNECT FOCUS ANODE (PIN 4) TO BOOST, B+ OR B-, WHICHEVER PROVIDES BEST FOCUS
PICTURE TUBE
V14 14ASP4
TO CONTROL PANEL, METAL CABINET & PICTURE TUBE MOUNTING BRACKET
ISOLATION NETWORK USED IN SOME VERSIONS
DENOTES CHASSIS GROUND
SW ON VOLUME CONTROL
THIS CONNECTION USED IN VERSIONS WITH UHF TUNERS
TO CATHODE (PIN 11 OF V7 (AUDIO OUTPUT))
270V SOURCE
160V SOURCE
155V SOURCE
NOISE LIMITER SYNC SEP AGC KEYING
V5 3BU8
SYNC PHASE INV
V8 A 6CG7
VERT MULT
V8 B 6CG7
VERT MULT VERT OUTPUT
V9 12DB5
DO NOT MEASURE
DEFLECTION YOKE
VERT. -To (EACH WINDING) HORIZ. -To
SUPER RANGE FINDER 100K
NO CONNECTION
VERT HOLD 200K
HEIGHT 1.3meg
VERT LINEARITY 500
HORIZ MULT
V10 6CG7
HORIZ OUTPUT
V11 12DQ6A
DO NOT MEASURE
HV RECT
V13 1B3GT
HORIZ. AFC SELENIUM DIODE TERMINAL GUIDE
HORIZ HOLD
HORIZ DRIVE 10K
BOOST 580V
DAMPER
V12 12AX4GTA
DO NOT MEASURE
HV TRANSFORMER TERMINAL BOARD
V12 12AX4GTA 7A8 96VAC
V11 12DQ6A 2A7 84VAC
V9 12DB5 5A4 72VAC
V14 14ASP4 8A1 60VAC
V4 6AW8A 4A8 54VAC
V5 3BU8 4A5 48VAC
V6 6CG7 4A5 45VAC
V3 3CB6 6A3 42VAC
V2 3BZ6 4A3 39VAC
V8 6CG7 6A5 0VAC
V10 6CG7 6A5 0VAC
TO UHF TUNER
TO VHF TUNER M Ω
V6 3DT6 4A3 21VAC
V7 12CU5 3A4 24VAC
V1 3BZ6 3A4 36VAC
V1 3BZ6 3A4 0VAC
■ MEASURED FROM PIN 1 OF V2.
▲ MEASURED FROM 160V SOURCE.
⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured at 1000 ohms per volt.
2. Pin numbers are counted in clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line Voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; no signal applied.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

ADMIRAL MODELS P14D11, 12, 13, 14, PA14D11, 12, 13, 14 (Ch. 16H1, 16AH1)

TUBE PLACEMENT CHART





TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

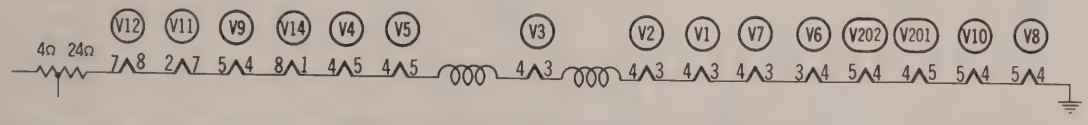
POWER SUPPLY FAILURE
No raster, no sound Fusible Resistor (R94), Rectifiers (M1, M2)

SWEEP FAILURE
No raster, has sound Rectifier (M3), V10, V11, V12, V13, V14
No vertical deflection V8, V9
Poor vert. linearity or foldover V8, V9
Poor horiz. linearity or foldover V10, V11, V12
Narrow picture V10, V11, V12, M1, M2
Vert. off freq. V8, V9
Horiz. off freq. V10

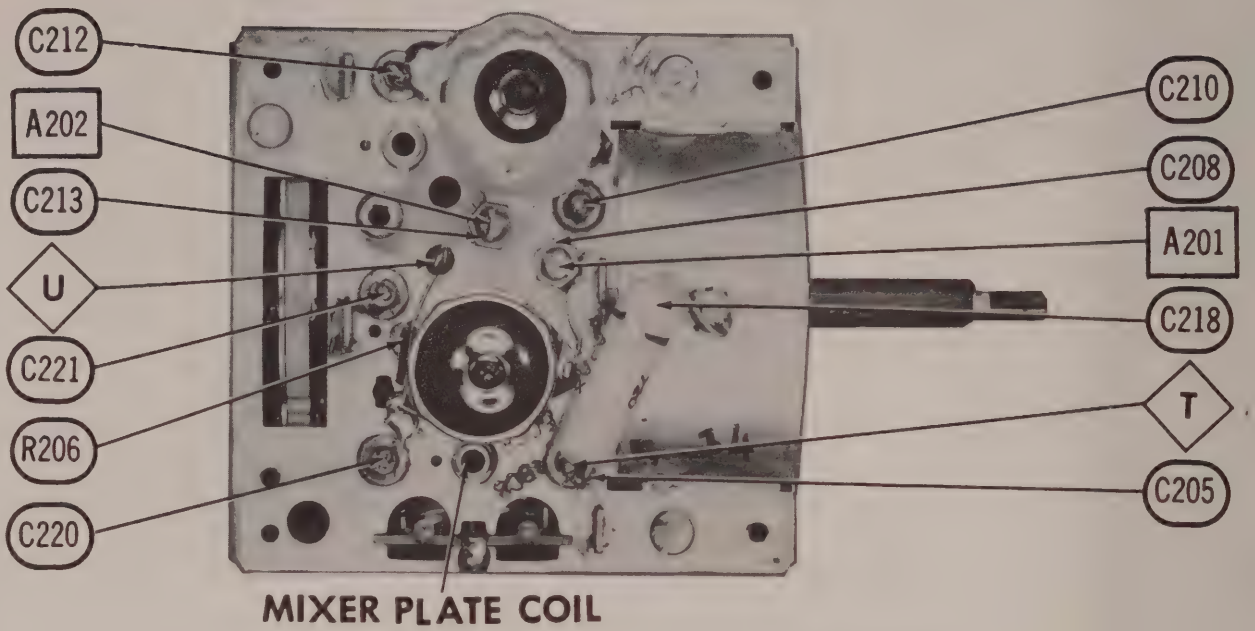
LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (M4), V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V14
Has pic, no sound V4, V6, V7
Overloaded picture V5

SYNC FAILURE
No vert. sync V5, V8
No horiz. sync V5, V8, M3
No vert. or horiz. sync V5, V8

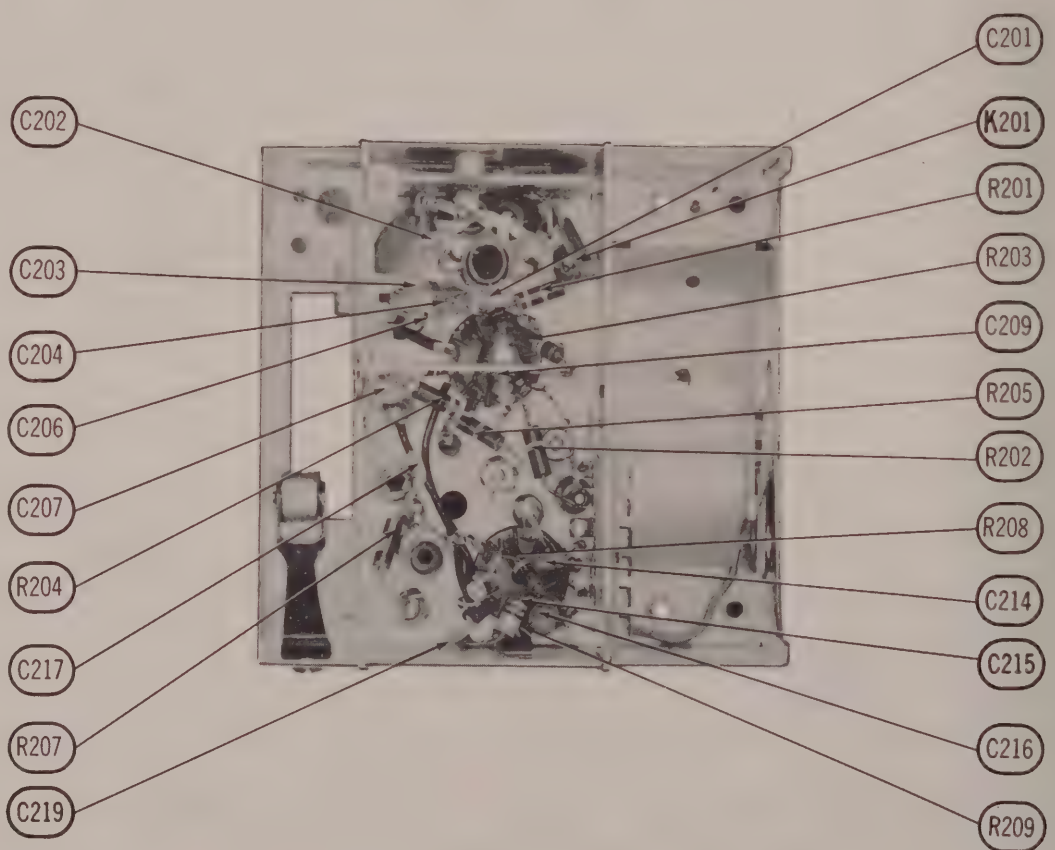
This receiver employs tubes used in a series filament network, an open filament in any tube will cause the set to be inoperative. (See circuit below.)



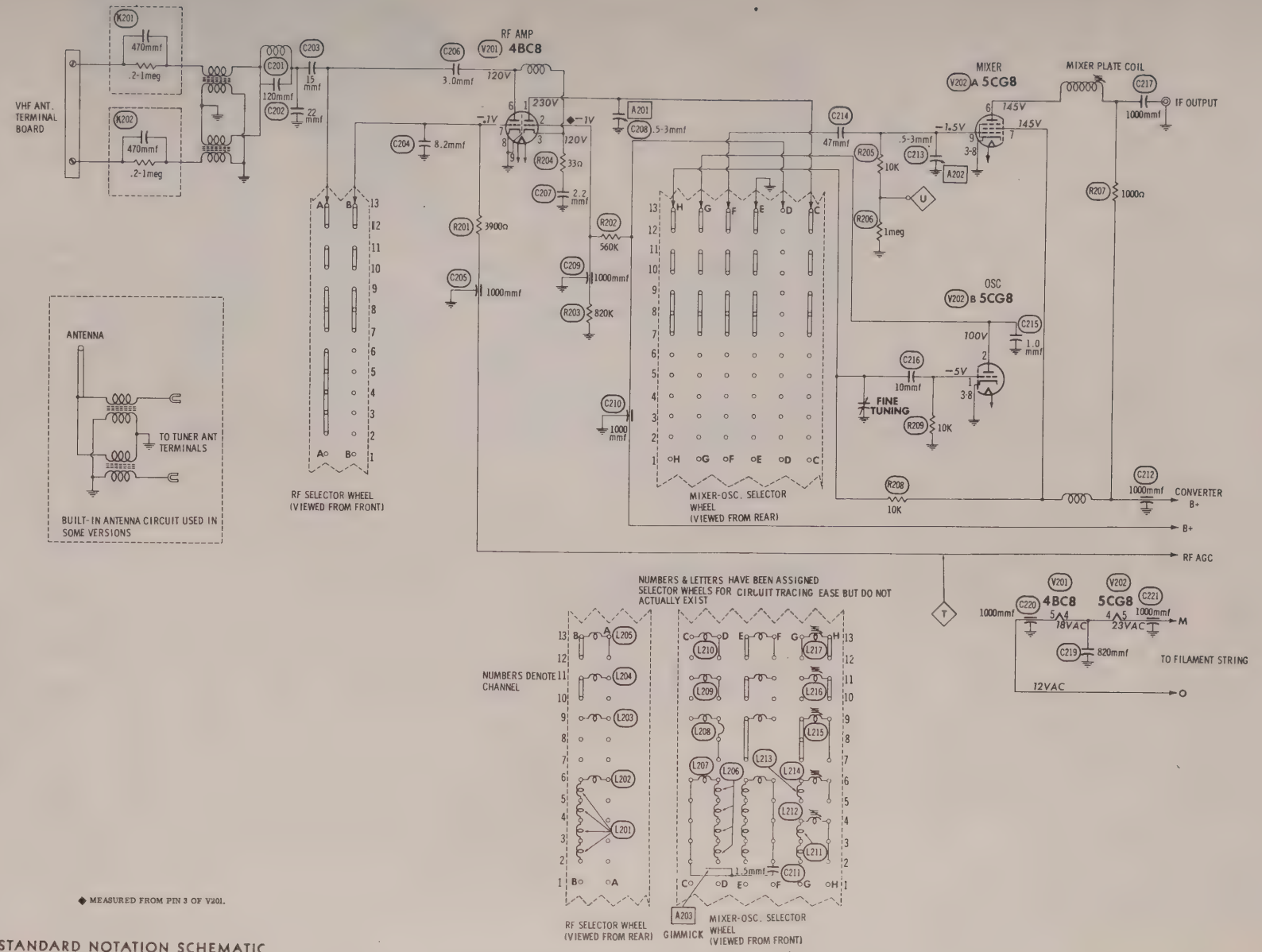
SET 405 FOLDER 1



RF TUNER-TOP VIEW



RF TUNER-BOTTOM VIEW



◆ MEASURED FROM PIN 3 OF V201.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

VHF TUNER #94E144-19

ADMIRAL MODELS P14D11, 12, 13, 14, PA14D11, 12, 13, 14 (Ch. 16H1, 16AH1)

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.

VHF OSCILLATOR ALIGNMENT

Turn the set on and allow 15 to 20 minutes warm-up period.
Set the channel selector to the lowest channel operating in the area.
Set the fine tuning to the center of its range.
Set other controls for normal picture and sound.
Using a 1/8" non-metallic alignment tool, carefully adjust the oscillator slug for best picture and sound. (NOTE: This is not necessarily the point of loudest sound). If two slugs are visible at the front of the tuner, adjust the one nearest the top of the tuner chassis. Repeat this procedure for the remaining stations, adjusting them in sequence from the lowest to the highest.

VHF RF AND MIXER ALIGNMENT

Connect the negative lead of a 2 volt bias supply to point (T). Positive to chassis.
If a separate marker generator is used, couple loosely to the high side of the sweep generator output lead.
Tuner shield must be in place during alignment.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
NOTE: On VHF-UHF tuners, ground the high side of the 1meg resistor located on the top of tuner chassis.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point (U). Low side to chassis.	A201, A202	Adjust for response curve similar to Fig. 201 with markers above 90%.
2.	"	"	85MC	83.25MC 87.75MC	6	"	A203	Adjust for response curve similar to Fig. 201. Adjust for maximum amplitude and flat-topped appearance with markers properly positioned.
3.	"	"	213MC	211.25MC 215.75MC	13	"		Check for response curve similar to Fig. 201. If markers fall below 70% on any high band channel, make compromise adjustment of A201 and A202 with channel switch set to that channel. If markers fall below 70%, on any low band channel, make compromise adjustment of A203 with channel selector set to that channel. Check all other channels to see that they have not been seriously affected.
			207MC	205.25MC 209.75MC	12			
			201MC	199.25MC 203.75MC	11			
			189MC	187.25MC 191.75MC	9			
			183MC	181.25MC 185.75MC	8			
			177MC	175.25MC 179.75MC	7			
			79MC	77.25MC 81.75MC	5			
			69MC	67.25MC 71.75MC	4			
			63MC	61.25MC 65.75MC	3			
			57MC	55.25MC 59.75MC	2			

UHF TUNER ALIGNMENT

This portion of the receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

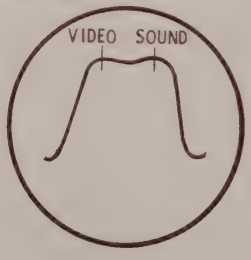
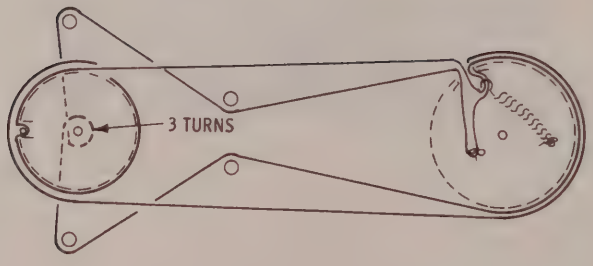
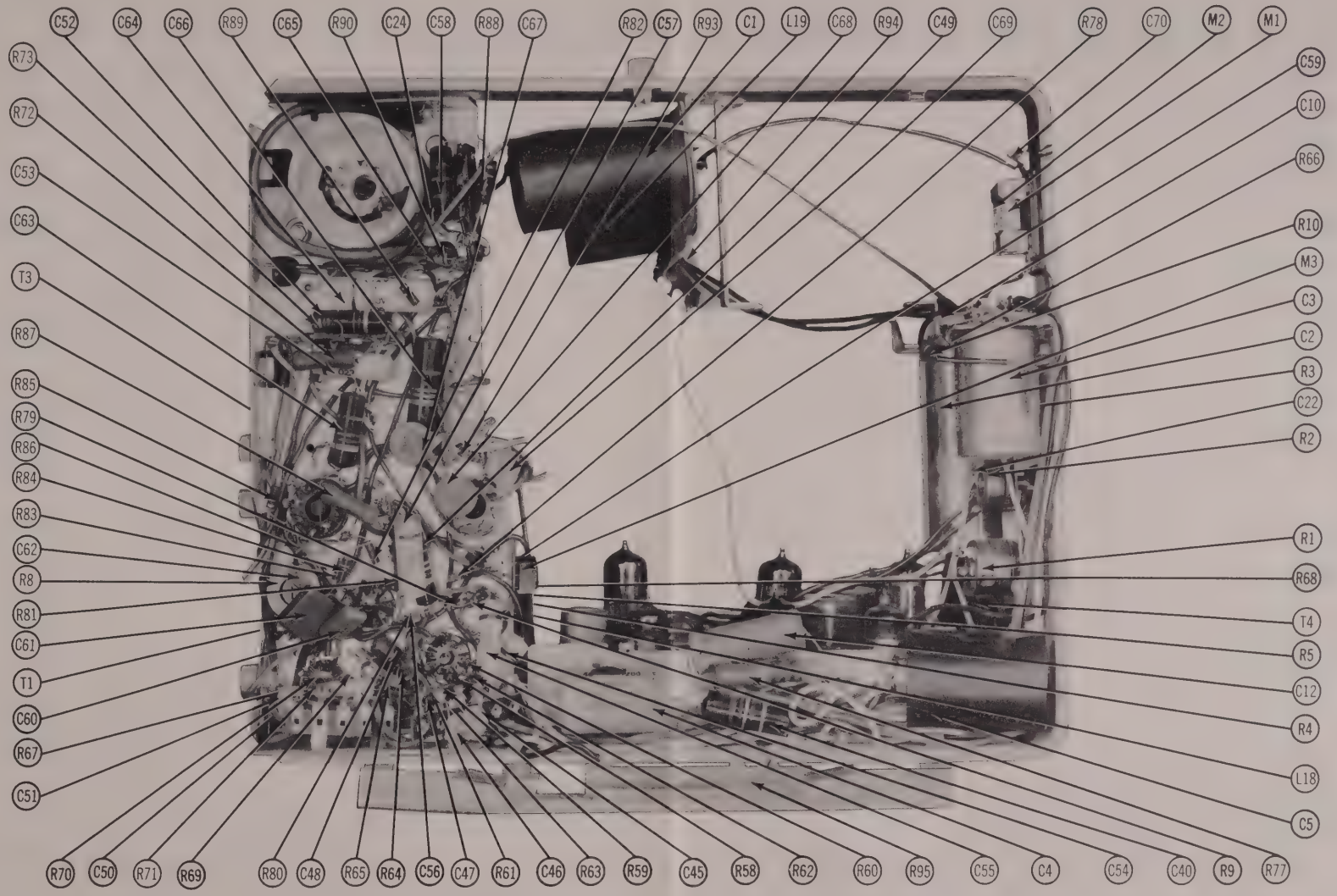


FIG. 201



DRIVE CORD STRINGING



CHASSIS BOTTOM VIEW

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.

VIDEO IF ALIGNMENT

Connect the negative lead of a 3.5 volt bias supply thru a 10K resistor to point (A).
Connect positive lead to chassis.
Turn super range finder control fully clockwise.
Connect a 270mmf capacitor across the VTVM test leads. Use the lowest scale on the VTVM. While peaking the adjustments, keep reducing the signal generator to keep the VTVM reading no higher than -1 volt DC.
Connect a short across the antenna terminals.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over mixer-osc. tube (V202). Low side to chassis.	41.25MC (Unmod)	12	DC probe thru 47K to point (B). Common to chassis. (Across video det. load).	A1	Adjust for MINIMUM deflection.
2.	"	"	47.25MC	"	"	A2	"
3.	"	"	42.3MC	"	"	A3	Adjust for maximum deflection.
4.	"	"	45.3MC	"	"	Mixer Plate Coil & A4	"
5.	"	"	41.5MC	"	"	A5	"
6.	"	"	42.0MC	"	"	A6	"
7.	"	"	43.5MC	"	"	A7	"

OVERALL VIDEO IF RESPONSE CHECK

Connect bias as under "Video IF Alignment".
Leave the super range finder control fully clockwise.
Connect a 270mmf capacitor across the input leads of the scope.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Direct	High side to ungrounded tube shield floating over mixer-osc. tube (V202). Low side to chassis.	44.0MC (10MC Swp)	41.25MC 42.0MC 43.5MC 45.0MC 45.75MC 47.25MC	12	Vert. Amp. thru 10K to point (B). Low side to chassis. (Across video det. load).		Check for response similar to Fig. 1 with markers as indicated. If curve does not resemble Fig. 1, repeat "Video IF Alignment".
9.	"	"	"	45.0MC	"	"		Connect a short, heavy, solid jumper across L3. Response curve should be similar to Fig. 2. If the 45.0MC marker does not fall on the peak adjust the mixer plate coil slug until it does. Remove the short and repeat step 3 of the "Video IF Alignment". Recheck step 8 above.

SOUND IF ALIGNMENT

Tune in the strongest TV signal available in the area. Adjust the set for normal operation. Turn the super range finder control fully counter clockwise.
Using a hexagonal non-metallic alignment tool, turn A8 slowly clockwise until a buzz is heard in the sound. Then turn counter clockwise for maximum undistorted sound. (There may be two points approximately $\frac{1}{4}$ turn apart at which the sound is loud. Use the one with the slug the farthest clockwise.
Reduce the signal at the antenna terminals (by use of an adjustable attenuator or disconnecting the antenna) until a strong hiss similar to super regeneration is heard in the sound.
Carefully adjust A9 for maximum undistorted sound with MINIMUM hiss. If the hiss disappears during alignment, further reduce the signal until the hiss returns, then readjust A9.
Carefully adjust A10 for MINIMUM 4.5MC beat pattern in the picture. 4.5MC beat interference appears as a very fine cross hatch pattern on the screen.
Carefully adjust A11 for maximum undistorted sound with MINIMUM hiss. If the hiss disappears during alignment, further reduce the signal strength. Readjust A11.
Repeat entire procedure, if necessary. DO NOT RETOUCH A9 WITHOUT REPEATING ALL OF SOUND ALIGNMENT.

TUNER ALIGNMENT INSTRUCTIONS LOCATED ON PAGE 6.

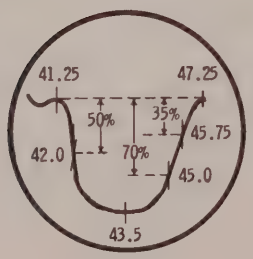
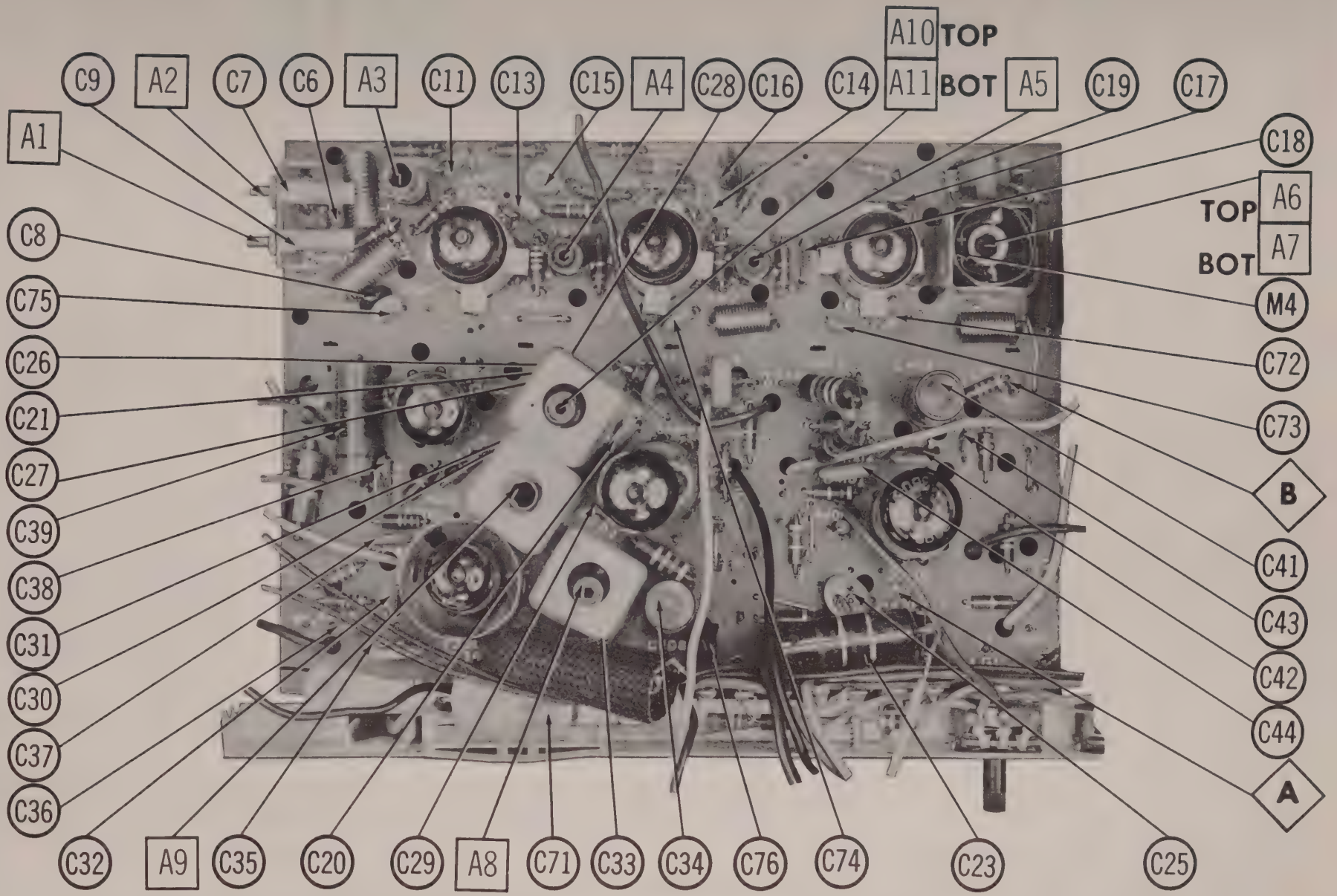


FIG.1

FIG.2



PRINTED BOARD - CAPACITOR & ALIGNMENT IDENT.

ADMIRAL MODELS P14D11, 12, 13, 14, PA14D11,
12, 13, 14 (Ch. 16H1, 16AH1)

FOLDER 1

SET 405 FOLDER 1

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	1st. Video IF Amp.	3BZ6	
V2	2nd. Video IF Amp.	3BZ6	
V3	3rd. Video IF Amp.	3CB6	
V4	Video Output-Sound IF Amp.	6AW8A	
V5	AGC Keying-Noise Limiter - Sync Sep.	3BU8	
V6	Audio Det	3DT6	
V7	Audio Output	12CU5	

ITEM No	USE	TYPE	NOTES
V8	Sync Phase Inv. - Vert. Mult.	6CG7	
V9	Vert. Mult. - Vert. Output	12DB5	
V10	Horiz. Mult.	6CG7	
V11	Horiz. Output	12DQ6A	
V12	Damper	1AX4GTA	
V13	HV Rect.	1B3GT	

PICTURE TUBE

ITEM No	REPLACEMENT DATA: ADMIRAL PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	SYLVANIA PART No.	NOTES
V14	14ASP4			14ASP4 ①	① "Silver Screen 85"

ELECTROLYTIC CAPACITORS

ITEM No	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ADMIRAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	100	150	67D15-202	AFH31-36-05	A0250	FP150	TMS-51	S-190	TVL-1750
C2A	a100	300	67D15-306	AFH2-41-50	B0332	FP227.7	TMT-155	D-148	TVL-2641
B	a100	300							
C3A	a5	200	67D15-307	AFH4-48-30	D0032	FP449		Q-136	R2573 *
B	a20	200			BR505	LTC39			
C	a80	200							
D	50	50							
C4	40	200	67A35-2	PRS250V40	BR4025	TC58	TD-40-350	MT-3540	TVA-1511
C5A	a50	300	67D15-304	AFH3-41	C0320	FP396.3	TMT-47	D-133	R1574 *
B	a10	300							

* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ADMIRAL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C6	14		65D6-40						NPO
C7	.5-8		66A38-8						N2A0
C8	15								N220 5% ①
C9	3-12 §		66A38-7						N420
C10	5000		65D10-5	BPD-005	DD-502	BYAI0D5	DC525	5SK-D5	②
C11	840		65D10-91		DD-821	L10T82	GEM-31	5GA-T82	
C12	1	100	64A10-3	P388N-1.0		CUB4W1		4TM-M1	
C13	840		65D10-91		DD-841	L10T84		5GA-T82	
C14	840		65D10-91		DD-841	L10T83		5GA-T82	
C15	820		65D10-91		DD-841	L10T84		5GA-T82	①
C16	2200			BPD-0023	DD-242	BYAI0D5E1	UC-5224	5GA-D52	
C17	560		65D6-131						N3300 5%
C18	5000		65D10-5	BPD-005	DD-502	BYAI0D5	DC525	5SK-D5	
C19	6		65B41-068	NPO-SI 6.8	TCZ-6R8	CTA8V68C	ZT-5568	5TCCH-V68	10%
C20	5000		65D10-5	BPD-005	DD-502	BYAI0D5	DC525	5SK-D5	
C21	47		65D10-80	DI-000047	DD-470	L10Q47	UC-5447	5GA-Q47	
C22	15		65B38-150	NPO-DI 000015	DD-150	L10Q5		5TCC-Q15	10%
C23	.1	400	64B16-53	P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	N420
C24	1000	1000		HYD-15-1000	DD-102	BYAI0D1	DC3021	5GA-D1	③
C25	10000		65D10-41	BPD-01	DD-103	BYA6S1	DC511	5SK-S1	
C26	4.7			NPO-SI 4.7	TCZ-4R7	CYA5V47C	ZT-5547	5TCCB-V47	
C27	47		65D10-80	NPO-DI 47	DT2-47	L10Q47	UC-5447	5GA-Q47	
C28	47		65D10-80	NPO-DI 47	DT2-47	L10Q47	UC-5447	5GA-Q47	
C29	1000		65D10-53	BPD-001	DD-102	BYA6D1	DC521	5SK-D1	
C30	4.5		65B27-045						5%
C31	82		65D10-98						5%
C32	1000		65D10-53	BPD-001	DD-102	BYA6D1	DC521	5SK-D1	
C33	18		65D10-140						N220 5%
C34	.047	200	64B16-55	P388N-047		BC5S47	ACE6147	2SE-S47	
C35	4700		65D10-112	BPD-0047	DD-472	BYAI0D47	UC-5247	5SK-D47	
C36	10000		65D10-41	BPD-01	DD-103	BYA6S1	DC511	5SK-S1	
C37	10000		65D10-41	BPD-01	DD-103	BYA6S1	DC511	5SK-S1	
C38	10000		65D10-41	BPD-01	DD-103	BYA6S1	DC511	5SK-S1	
C39	.01	600	64B8-13	P688N-01	DS-103	CUB6S1	GEM-611	6TM-S1	
C40	.1	400	64C27-32	P488N-1	DF-104	CUB4P1	GEM-401	4TM-P10	
C41	.1	200	64B8-26	P488N-1		BC2P1J	ACE401	4SE-P10	
C42	10000		65D10-41	BPD-01	DD-103	BYA6S1	DC511	5SK-S1	
C43	150		65D10-85	BPD-0001S	DD-151	L10T15	UC-5315	5GA-T15	
C44	4700		65D10-112	BPD-0047	DD-472	BYAI0D47	UC-5247	5SK-D47	
C45	4700		65D10-112	BPD-0047	DD-472	BYAI0D47	UC-5247	5SK-D47	
C46	10000		65D10-41	BPD-01	DD-103	BYA6S1	DC511	5SK-S1	
C47	4200		65D10-111	BPD-0042	DD-422	BYAI0D42	UC-5242	5GA-D42	
C48	.001	1600	64B2-52	P168N-001	DD68-102	CUB16I1	GEM-1621	M5-D1	
C49	.1	200	64C26-59						10%
C50	.1	600	64B8-26	P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	
C51	.1	400	64C27-32	P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C52	.047	200	64B8-41	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C53	.022	600	64B22-11						10%
C54	.001	400	64C44-45				GEM-1621		10%
C55	.001	400	64C44-45				GEM-1621		10%
C56	4700		65D10-112	BPD-0047	DD-472	BYAI0D47	UC-5247	5SK-D47	
C57	.022	200	64C25-81	P288N-022	DD-203	CUB2S22	GEM-4122	2TM-S22	
C58	.01	800	65D10-41	P688N-01	DS-103	CUB6S1	GEM-611	6TM-S1	
C59	1900		65B21-392	1464-0039		1R5D39		M5-439	10%
C60	390		65B21-391		D6-391	1R5T39		M5-339	10%
C61	660		65B21-681	1464-00068	D6-681	1R5T68		M5-368	10%
C62	4700		65D10-112	BPD-0047	DD-472	BYAI0D47	UC-5247	5SK-D47	
C63	.047	400	64B8-38	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C64	.1	600	64B8-7	P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	
C65	1000	5000	65D20-147						10%
C66	.033	600	64C25-80	P688N-033	DF-303	CUB6S33	GEM-6133	6TM-S33	
C67	410	2000	65D10-151						N1500 10%
C68	210	2000	65D10-151						N1500 10%
C69	120	2000	65D10-148						N1500 10%
C70	1000	1000		DAC-2	DD-102	BYAI0DE	DC3021	5GA-DI	
C71	.047	800	64B2-35	P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C72	820		65D10-91		DD-821	L10T82		5GA-T82	
C73	820		65D10-91		DD-821	L10T82		5GA-T82	
C74	820		65D10-91		DD-821	L10T82		5GA-T82	
C75	820		65D10-91		DD-821	L10T82		5GA-T82	
C76	5000	1400	65D10-153	DAC-9	DD6-502	HVE16D6		40HK-D5	

① Chassis stamped Run 19 and higher use 18mmf 5% N220 in this application (Part#65D10-140).
§ Not used in some versions.
② Chassis stamped Run 10 use 300mmf in this application (Part #65D10-141).

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ADMIRAL PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	75D1-93	B-70	A47-1meg-Z	Q3-137	TA16A	Volume
B	Shaft			Not Req.	KH8-3	Not Req.	Not Req.	
C	Switch			KB-1 or KR-1*	SWE-L2	78-1	U8-26	
R2A	25K	½	75D20-98	B-26	A47-25K-S	Q11-120	TA25L	Contrast
B	Shaft			Not Req.	KH8-3	Not Req.	Not Req.	
R3A	300K	½	75D20-97	B-46	A47-300K-S	Q11-129	U43	Vert. Hold
B	Shaft			Not Req.	KH8-3	Not Req.	Not Req.	
R4A	100K	½	75D20-101	AB-40	A47-100K-S	Q11-128	PTA16L	Brightness
B	Shaft			AK-19	RN-3	TQ	Not Req.	
R5A	500Ω	½	75D20-100			Bil-103	PTA25L	Vert. Lin.
B	Shaft					TMi-Kit	Not Req.	
R6A	1.5meg	½	75D20-104			2il-138	PTA25L	Height
B	Shaft					TMi-Kit	Not Req.	
R7A	100K	½	75D20-101	AB-40	A47-100K-S	Q11-128	PTA16L	Super Range Finder
B	Shaft			AK-19	RN-3	TQ	Not Req.	
R8A	10K	½	75D20-106	AB-14	A47-10K-S	Q11-116	TA14L	Horiz. Drive
B	Shaft			AK-1	FKS-1/4	TQ	Not Req.	

* Use KR with CRL "Red Label" and KB with "Blue Label" controls.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING: OHMS	RATING: WATT	ADMIRAL PART No.	NOTES
R9	4200Ω	4	60B20-242	Note 1
R10	1800Ω		60B8-182	Note 4
R11	4.7meg		60B8-475	
R12	7.5meg 5%		60B8-756	Note 3
R13	4700Ω 5%		60B7-472	
R14	1000Ω		60B8-102	
R15	2.2meg		60B8-225	
R16	150K		60B8-154	
R17	39K		60B8-393	
R18	470Ω		60B8-471	
R19	47Ω		60B8-470	
R20	220K		60B8-224	
R21	220K		60B8-224	
R22	22K		60B8-223	
R23	4700Ω		60B8-472	
R24	470Ω		60B8-471	
R25	68Ω		60B8-680	
R26	470Ω		60B8-471	
R27	150Ω		60B8-151	
R28	3900Ω		60B8-392	
R29	100Ω		60B8-101	
R30	8200Ω		60B8-822	
R31	3300Ω	2	60B20-332	
R32	1500Ω	1	60B15-152	
R33	8200Ω		60B8-822	
R34	180K		60B8-184	
R35	220Ω		60B8-221	
R36	82000Ω	1	60B14-822	
R37	10K		60B8-103	
R38	820K		60B8-824	Note 4
R39	100K		60B8-104	
R40	47K	1	60B8-473	
R41	330K		60B8-334	
R42	240K		60B8-244	Note 5
R43	560K		60B8-564	
R44	8200Ω		60B8-822	
R45	680Ω		60B8-681	
R46	910K 5%		60B7-914	
R47	1.2meg 5%		60B7-125	
R48	150Ω		60B8-151	
R49	220Ω	2	60B20-221	
R50	330K		60B8-334	
R51	47K		60B8-473	
R52	56K		60B8-563	
R53	47K		60B8-473	
R54	4.7meg		60B8-475	
R55	270K		60B8-274	
R56	15K		60B8-153	
R57	4.7meg		60B8-475	
R58	2.2meg		60B8-225	
R59	3300Ω		60B8-332	
R60	5600Ω		60B8-562	
R61	5600Ω		60B8-562	
R62	15K		60B8-153	
R63	15K		60B8-153	
R64	220K		60B8-224	
R65	470K		60B8-474	
R66	56K		60B8-563	
R67	2.2meg		60B8-225	
R68	270Ω	1	60B14-271	
R69	220K		60B8-224	
R70	100Ω		60B8-101	
R71	18K	1	60B14-183	
R72	470Ω	3	6LB24-317	
R73	39K		60B8-393	
R74	220Ω		60B8-221	
R75	220Ω		60B8-221	
R76	3.5Ω		61A37	
R77	100K 5%		60B7-104	
R78	100K 5%		60B7-104	
R79	4.7meg		60B8-475	
R80	470K		60B8-474	
R81	5600Ω		60B8-562	
R82	1000Ω		60B8-102	
R83	120K		60B8-124	
R84	82K		60B8-823	
R85	1meg		60B8-105	
R86	100Ω		60B8-101	
R87	15K	3		
R88	22K	2	60B20-223	
R89	150K		60B8-154	
R90	470K		60B8-474	
R91	100K		60B8-104	Note 6
R92	100K		60B8-104	Note 7
R93	4700Ω		60B8-472	
R94	7.5Ω	5	61A19-2	
R95A	24Ω	13	61A5-14	
B	4Ω	2		
R96	470K		60B8-474	

Note 1. Ch. 16AH1 use 1800Ω 2W in this application (Part #60B20-182).
Note 2. Chassis stamped Run 10, 11 and 12 use 470Ω in this application (Part #60B-471).
Note 3. Chassis stamped Run 16 and higher use 10meg in this application (Part #60B8-106).
Note 4. Not used in some versions.
Note 5. Chassis stamped Run 19 and higher use 100K in this application (Part #60B8-104).
Note 6. Not used in chassis stamped Run 12 or Run 13. Some versions may use 120K in this application (Part #60B8-124).
Note 7. Not used in chassis stamped Run 10 thru Run 14. Some versions may use 120K in this application (Part #60B8-124).

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: ADMIRAL PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	Vert. Output	79B43-12				VO-101	26S14		
T2 A	Yoke-Horiz. (19MH)	94D47-1 ①		MDF-120	Y-110	DY27A	Y-53	Y-60 &	
B	(110°)-Vert. (33MH)			②③	②③	②③	②③	NW25 ④	
M6	Rear Cover & Centering Device	94C148-1							
T3	Horiz. Output	79D77-1		HVO-178	XI63		FLY-137		

① Does not include M6.
② Use original rear cover and centering device.
③ Use original yoke damping network, if necessary.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	IMPEDANCE: SEC.	REPLACEMENT DATA: ADMIRAL PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T4	2700Ω	3-4Ω	79D35-15	Z1101	A-3025	AU-506	A-3332	24S53	S-12X	

SPEAKER

ITEM No.	TYPE: SIZE	TYPE: FIELD	TYPE: V. C. IMP.	REPLACEMENT DATA: ADMIRAL PART No.	QUAM PART No.	NOTES
SP1	3½"	PM	3-4Ω	78B120-1 ①	3A07	① Alternate Part #78B120-2

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: ADMIRAL PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	47.25MC Trap Coil	73B37-1					
L2	41.25MC Trap Coil	73B37-1					
L3	1st. Video IF	74C132-31					
L4	2nd. Video IF	73C132-23					
L5	3rd. Video IF	73C132-23					
L6	4th. Video IF	73B191-2					Note 1
L7	RF Choke	73B31-4					
L8	Shunt Peaking Coil	73B3-34		TV-307	6150		879 Microhenries
L9	RF Choke	73B31-3					28 Microhenries
L10A	4.5MC Trap	73C185-2					
B	1st. Sound IF						
L11	Series Peaking Coil	73B8-43	19-3180 *	TV-184 *	6180 *	VP-5 *	189 Microhenries, wound on 4700Ω resistor
							Wound on 10K resistor
L12	Shunt Peaking Coil	73B3-36					
L13	2nd. Sound IF	74B188-1					
L14	Quadrature Coil	73C134-18					
L15	Line Choke	73B31-1					
L16	Fil. Choke	73B37-2	19-1001	BC-562	4604		1.4 Microhenries
L17	Fil. Choke	73B37-2	19-1001	BC-562	4604		1.4 Microhenries

* Parallel with 4700Ω resistor.
Note 1. Some versions may use alternate part #74B194-1 in this application

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.: PRI.	DC RES.: SEC.	REPLACEMENT DATA: ADMIRAL PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No.	NOTES
L18	95Ω		94C17-7	19-1576 *	TV-163 *	6210 *	H-102 *	HS-5 *	* Enlarge mounting hole

FILTER CHOKE

ITEM No	RATINGS: CURRENT (Measured)	RATINGS: DC RES	RATINGS: INDUCTANCE @ CURRENT 1000 ~	REPLACEMENT DATA: ADMIRAL PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L19	.250A	27Ω	.8 Hy.	74B18-24	C5037 ①	C-2974		C-2326 ①	38C44	C-23X

① Drill new mounting hole.

RECTIFIERS

ITEM No.	RATING: CURRENT (Measured)	REPLACEMENT DATA: ADMIRAL PART No.	FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M1	.250A	93A11 ①			3FH1 ①	M500 ①	① Silicon Type.
M2	.250A	93A11 ①			3FH1 ①	M500 ①	② Selenium Type
M3		93B5-4 ②	1215 ② ③		1T1 ④ ③		③ Two Required

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA: ADMIRAL PART No.	CBS PART No.	SYLVANIA PART No.	NOTES
M4	1N295 *		1N60	1N60	Video Det Pigtail; * Some versions may use 1N87 or 1N60

MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M5	Tuner	94Z144-19	VHF Ch. 16H1
	Tuner	94Z144-20	UHF-VHF Ch. 16AH1
	Tuner	94D12-5	UHF Ch. 16AH1
M6	Centering Device	94C148-1	Includes yoke rear cover
	Centering Device	94D146-1	Alternate
	Printed Board	A5770-2	Complete with components, less tubes

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

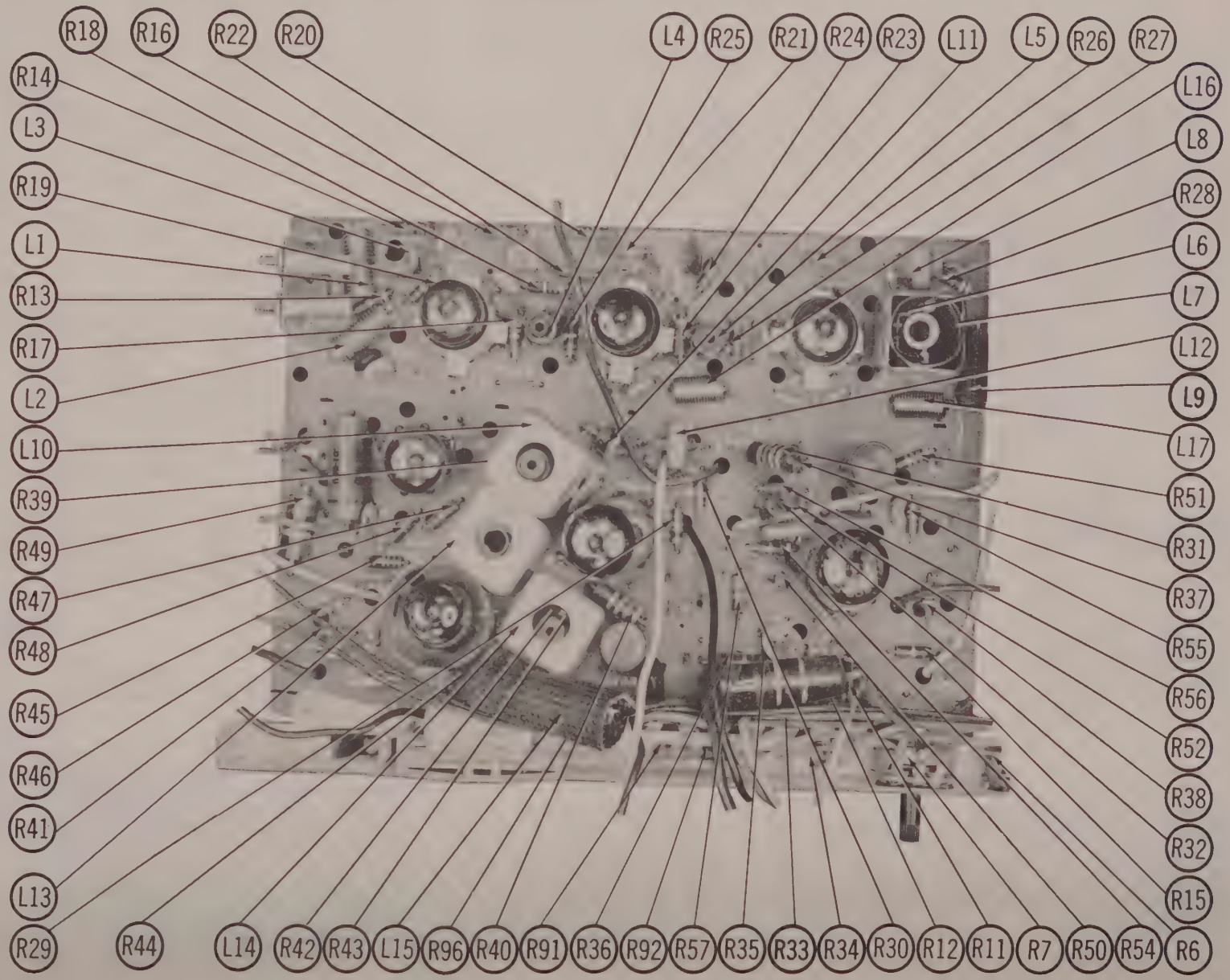
NAME	PART NO.	DESCRIPTION
Safety Glass	21DK00-2	
Bezel	23B290-3	Chrome
Bezel	23B290-1	Gold
Knob	23D237-6	Channel Selector - Models P14DH1, 12, 13
Knob	23D237-3	Channel Selector - Model P14DH4
Knob	23D237-5	Channel Selector - Models PA14DH1, 12, 13
Knob	23D237-1	Channel Selector - Model PA14DH4
Knob	23D237-3	Fine Tuning
Knob	23A143-9	On-off, Contrast, Vertical, Models P14DH1, PA14DH1, P14DH4, PA14DH4, P14DH3, PA14DH3
Knob	23A143-7	On-off, Contrast, Vertical, Models P14DH4, PA14DH4
UHF Indicator	23D237-4	
Handle	27C161-3	Models P14DH1, PA14DH1
Handle	27C161-1	Models P14DH3, PA14DH3
Handle	33C228-1	Models P14DH3, PA14DH3
Handle	27C161-2	Models P14DH4, PA14DH4
Cabinet	34E121-3	Models P14DH1, PA14DH1
Cabinet	34E121-3	Models P14DH3, PA14DH3
Cabinet	34E121-5	Models P14DH3, PA14DH3
Cabinet	34E121-7	Models P14DH4, PA14DH4

WIRING DATA

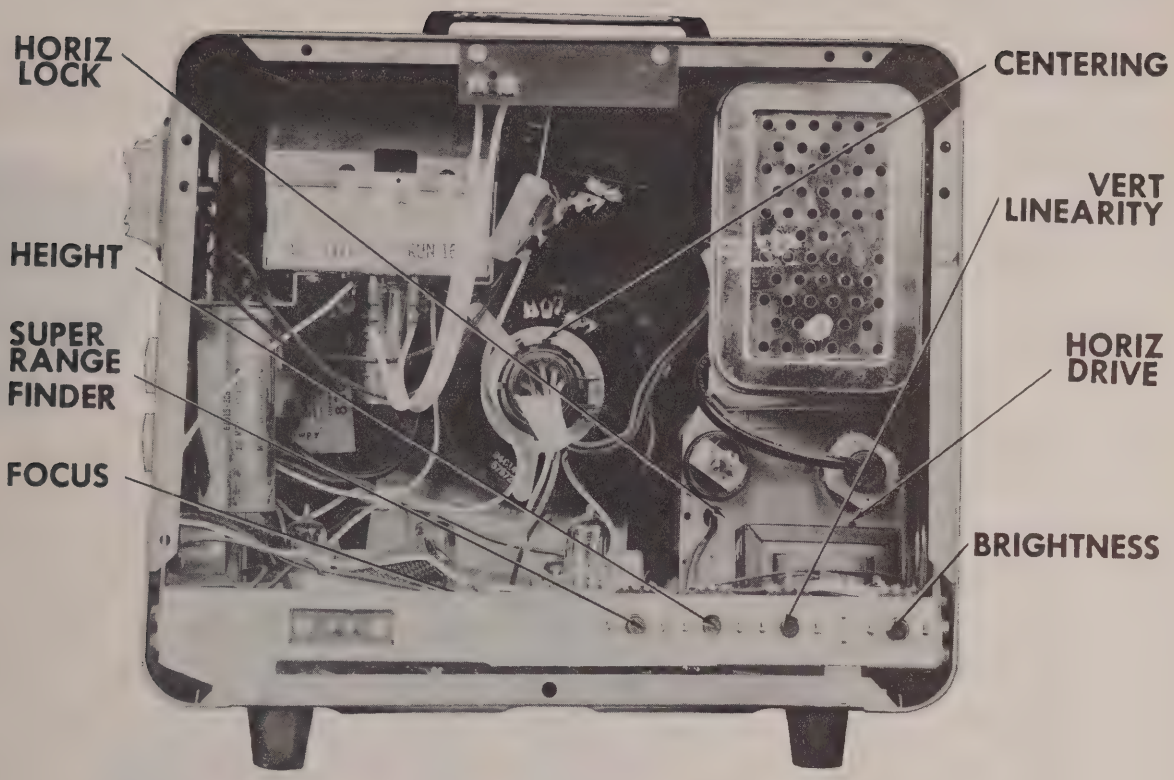
High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor

ADMIRAL MODELS P14DH1, 12, 13, 14, PA14DH1, 12, 13, 14 (Ch. 16H1, 16AH1)

FOLDER 1



PRINTED BOARD - RESISTOR INDUCTOR IDENT.



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

1. Allow 15 minutes for receiver to warm-up. Tune in a station and set Brightness and Contrast controls for a normal picture.

2. Turn Horizontal Drive (B1) fully clockwise. Foldover and/or compression will appear near the center of the picture. Slowly turn the Drive counterclockwise until the foldover or compression disappears. This point will provide maximum width and brightness. Do not turn the Drive too far counterclockwise as this shortens the life of the Horizontal Output tube.

3. Reduce the Contrast to MINIMUM. If the picture loses horizontal sync, adjust the Horizontal Hold to the point where the picture remains in sync and vertical lines do not bend near the top of the picture. If the Horizontal Hold requires adjustment, repeat steps 2 and 3.

TUNER PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amplifier	4BC8	

ITEM No.	USE	TYPE	NOTES
V202	Mixer-Osc.	5CG8	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	ADMIRAL PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C201	120		65D10-136							N1500 10%
C202	22		65D10-134	N750-SI 22	TCN-22	C10Q22U	TC7-22		5TCU-Q22	N750 10%
C203	15		65D10-135	N750-SI 15	TCN-15	C10Q15U	TC7-15		5TCU-Q15	N750 10%
C204	8.2		65D10-131	NPO-SI 8.2			TCO-8.2			NPO 5%
C205	1000		65B26-5	EF-001	MFT-1000				503C-D1	
C206	3.0		65B41-030	NPO-SI 3.0		C10V3C	TCO-3	ZT-553		10%
C207	2.2		65D10-121	NPO-SI 2.2	TCZ-2R2	C10V22C	TCO-2.2		5TCCB-V22	10%
C208	.5-3		66A38-6		829-3		3115-E	CT565A		
C209	1000		65B26-5	EF-001	MFT-1000				503C-D1	
C210	1000		65B26-5	EF-001	MFT-1000				503C-D1	
C211	1.5		65B28-015	NPO-SI 1.5	TCZ-1R5		TCO-1.5	ZT-5515	5TCCB-V15	10%
C212	1000		65B26-5	EF-001	MFT-1000				503C-D1	
C213	.5-3		66A38-6		829-3		3115-E	CT565A		
C214	47		65D10-73							N1400 5%
C215	1.0		65B28-010	NPO-SI 1.0	TCZ-1.0		TCO-1		5TCCB-V1	10%
C216	10		65D10-139							N1500 5%
C217	1000		65D10-53	BPD-001	DD-102	BYA6D1	ED-1000	DC521	5HK-D1	
C218	.022	200	64B25-61	P288N-022	DD-203	CUB4S22	ED-02	GEM-4122	2TM-S22	
C219	820		65D10-91	SI 820	DD-821	L10T82	ED-820		5GA-T82	
C220	1000		65B26-5	EF-001	MFT-1000				503C-D1	
C221	1000		65B26-5	EF-001	MFT-1000				503C-D1	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		ADMIRAL PART No.	NOTES
	OHMS	WATT		
R201	3900Ω		60B-9-392	
R202	560K		60B-9-564	
R203	820K		60B-9-824	
R204	33Ω		60B-9-330	
R205	10K		60B-9-103	

ITEM No.	RATING		ADMIRAL PART No.	NOTES
	OHMS	WATT		
R206	1meg		60B-9-105	
R207	1000Ω		60B-9-102	
R208	10K		60B-9-103	
R209	10K		60B-9-103	

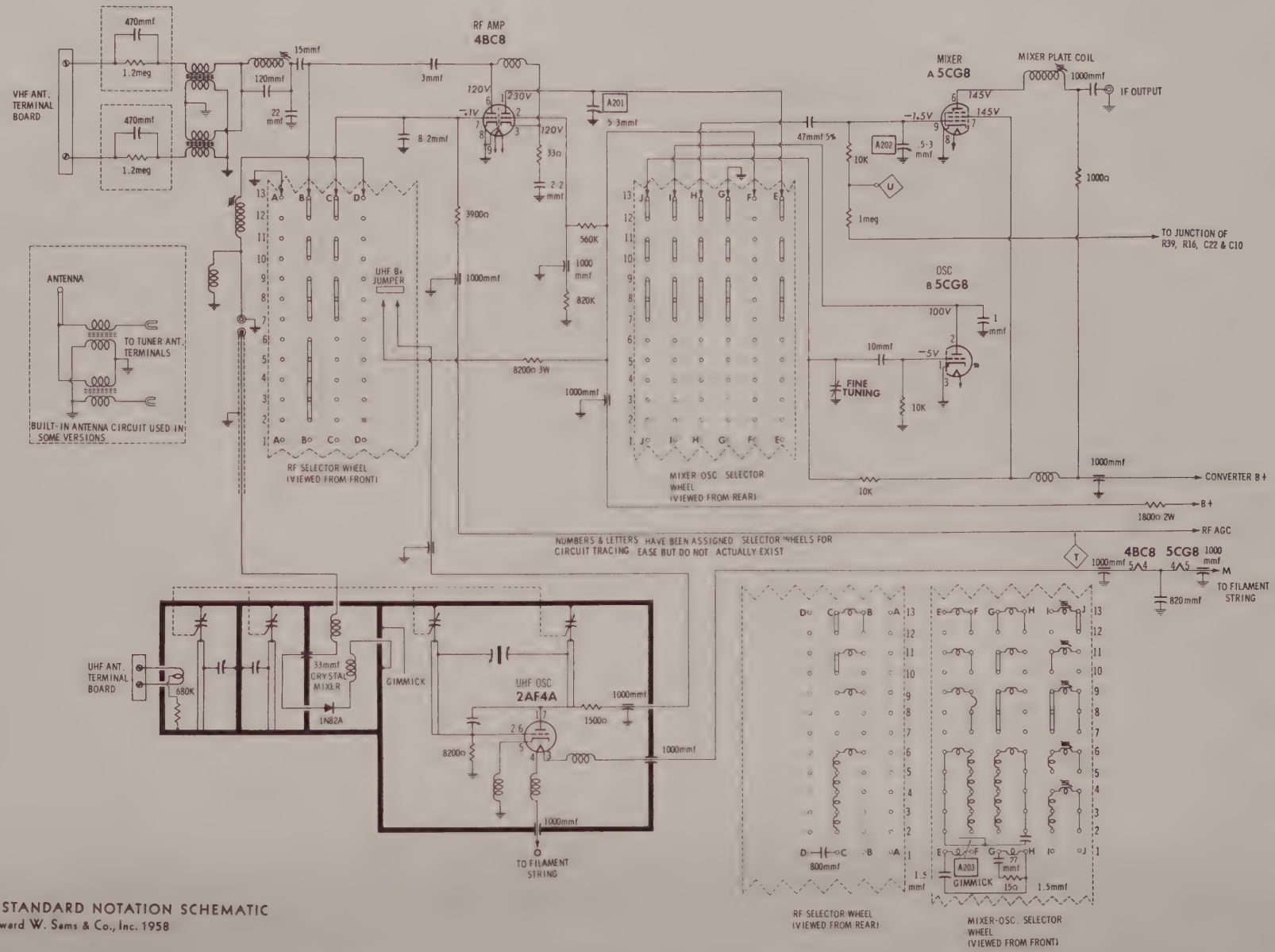
COILS (RF-IF)

ITEM No.	USE	ADMIRAL PART No.	NOTES
L201	Ant. Coils	73D30-12	Channels 2-5
L202	Ant. Coils	73D30-17	Channel 6
L203	Ant. Coil	73D30-18	Channel 9
L204	Ant. Coil	73D30-21	Channel 11
L205	Ant. Coil	73D30-40	Channel 13
L206	RF Coils	73D30-19	Channels 2-5
L207	RF Coil	73D30-27	Channel 6
L208	RF Coil	73D30-8	Channel 9
L209	RF Coil	73D30-5	Channel 11

ITEM No.	USE	ADMIRAL PART No.	NOTES
L210	RF Coil	73D30-25	Channel 13
L211	Osc. Coils	73D30-11	Channels 2, 3
L212	Osc. Coil	73D30-37	Channel 4
L213	Osc. Coil	73D30-34	Channel 5
L214	Osc. Coil	73D30-36	Channel 6
L215	Osc. Coil	73D30-1	Channel 9
L216	Osc. Coil	73D30-33	Channel 11
L217	Osc. Coil	73D30-32	Channel 13

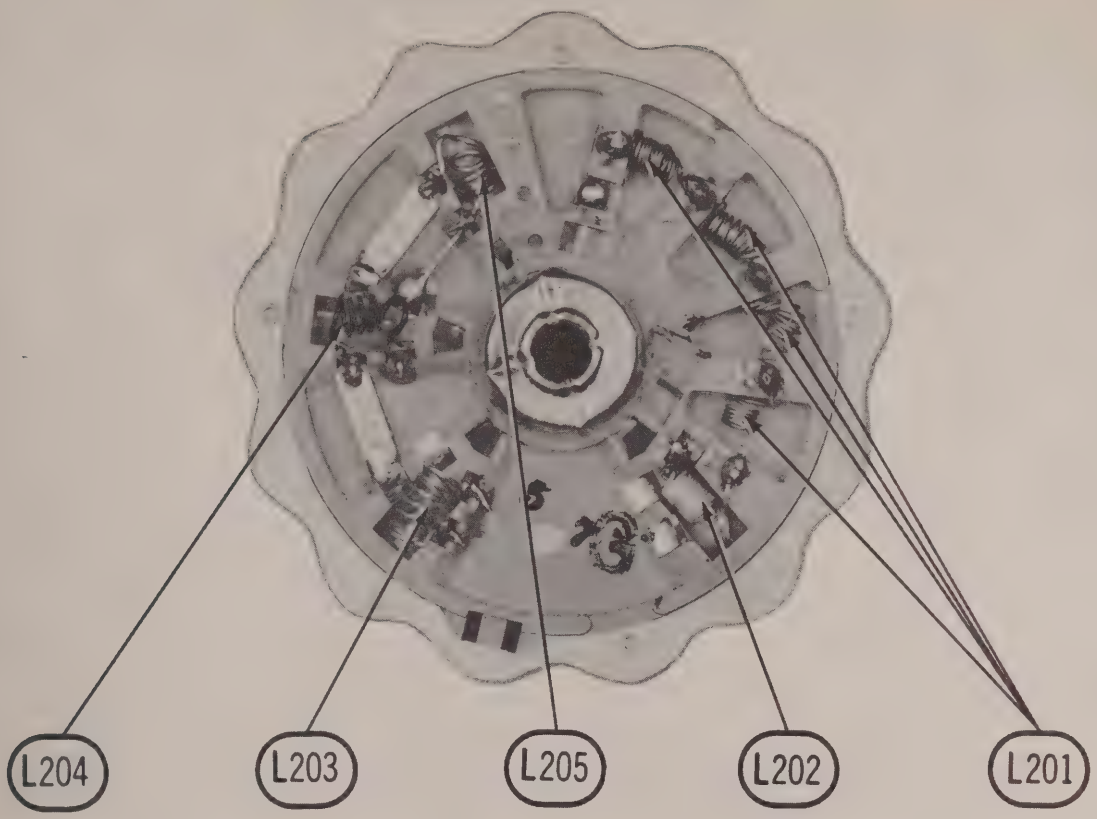
COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	ADMIRAL PART No.	REPLACEMENT DATA	
K201	Antenna Isolation	470mmf, .2-1meg	63A11-1	Centralab Sprague	RC-471 R-9197
K202	Antenna Isolation	470mmf, .2-1meg	63A11-1	Centralab Sprague	RC-471 R-9197

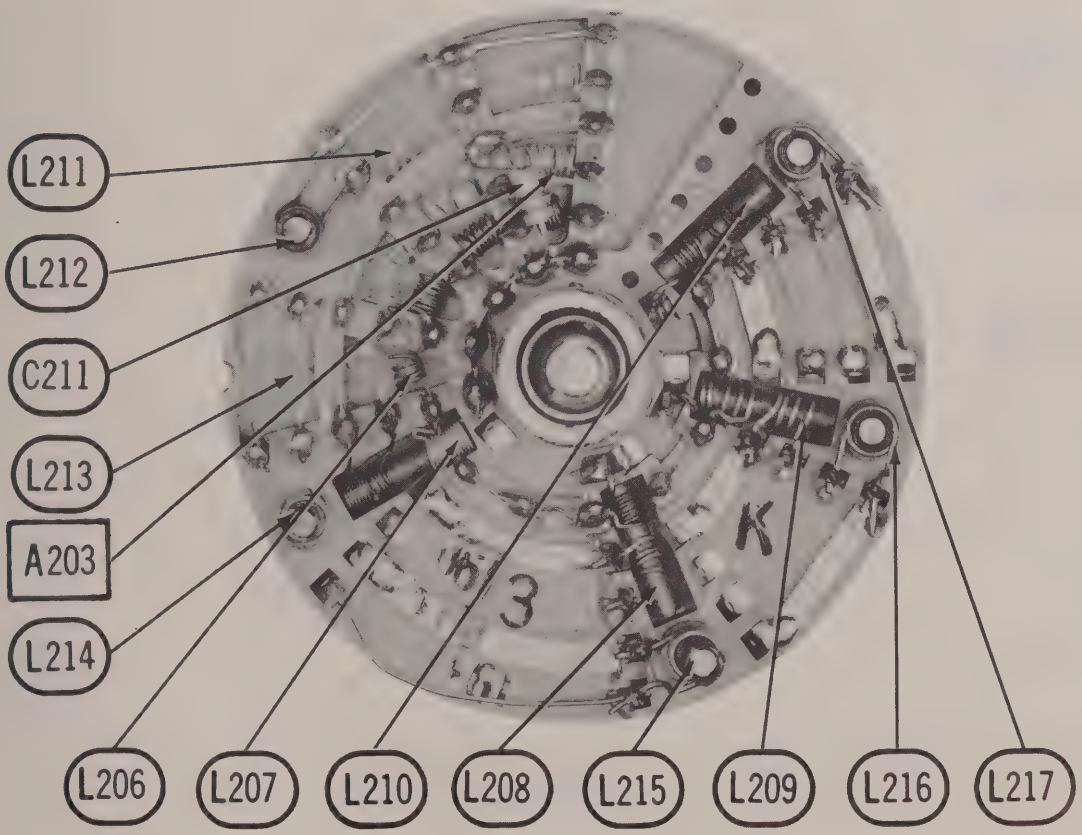


A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

UHF TUNER #94D112-5 & UHF-VHF TUNER #94E144-20



TUNER DISC REAR VIEW

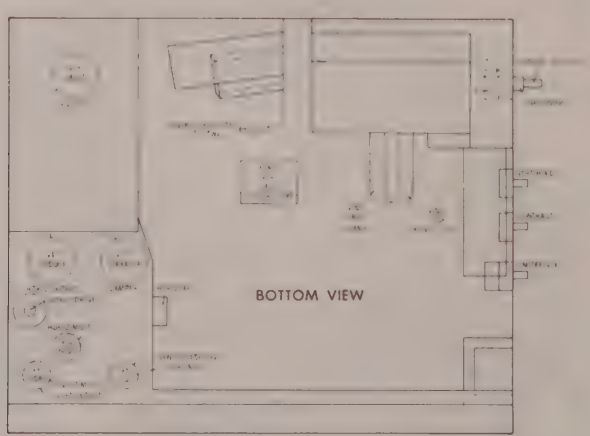


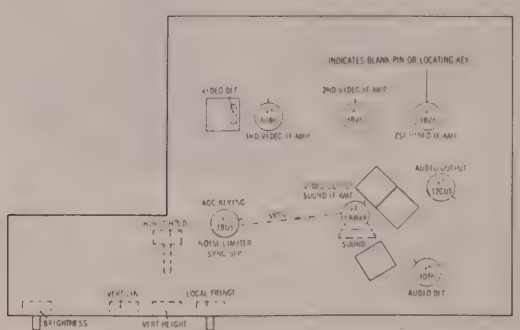
TUNER DISC FRONT VIEW

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	3BZ6	150K	47Ω	7.5Ω	8.5Ω	▲470Ω	▲470Ω	0Ω		
V2	3BZ6	▲22K	▲68Ω	8.5Ω	9.5Ω	†470Ω	†470Ω	110K		
V3	3CB6	.1Ω	150Ω	9.5Ω	10.5Ω	■ 470Ω	■470Ω	0Ω		
V4	6AW8A	0Ω	100K	†47K	11.5Ω	11Ω	0Ω	4000Ω	■ 8200Ω	■ 5000Ω
V5	3BU8	■ 220Ω	†8200Ω	1.7meg	11Ω	10.5Ω	■ 12K	• †360K	†30K	■ 4.7meg
V6	3DT6	18Ω	680Ω	5.5Ω	5Ω	†330K	■ 8200Ω	560K		
V7	12CU5	¶20K	500K	5.5Ω	7.5Ω	500K	†220Ω	†450Ω		
V8	6CG7	†12K	1.4meg	3300Ω	0Ω	1.5Ω	• †1.5meg	220K	• 130K	0Ω
V9	12DB5	†18K	• 550Ω	2.2meg	13Ω	14.5Ω	2.2meg	•550Ω	NC	†850Ω
V10	6CG7	†5600Ω	650K	1000Ω	1.5Ω	3Ω	†82K	120K	1000Ω	0Ω
V11	12DQ6A	TP	16Ω	NC	†15K	1meg	TP	14.5Ω	0Ω	TOP CAP ‡9Ω
V12	12AX4GTA	NC	TP	¶700K	NC	†0Ω	NC	18Ω	16Ω	
V13	1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP ‡384Ω
V14	14ASP4	11.5Ω	39K	‡240K	†240K	NC	NC	• 200K	13Ω	
V201	4BC8	†2200Ω	320K	INF	4Ω	3Ω	INF	3.5meg	0Ω	0Ω
V202	5CG8	10K	■ 10K	0Ω	4Ω	5Ω	■ 2800Ω	■ 1800Ω	0Ω	1meg
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM 270V SOURCE.
▲ MEASURED FROM PIN 7 OF V2.
■ MEASURED FROM 160V SOURCE.
‡ MEASURED FROM PIN 3 OF V12.
NC NO CONNECTION.
TP TIE POINT.





TUBE PLACEMENT CHART

SET 405 FOLDER 2

DUMONT
CHASSIS RA-400, RA-401

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 9 push-on type knobs from the front.
2. Remove 8 wood screws holding the rear cover. Remove the rear cover.
3. Remove 2 wood screws holding the antenna terminal board.
4. Remove the picture tube socket, yoke plug, HV lead, speaker leads and power supply plug.
5. Remove 2 chassis bolts at the rear of the chassis.
6. Remove the chassis.
7. Remove 4 chassis bolts holding the power supply.
8. Remove the power supply.

MODEL CHATHAM "21" (CH. RA-400)

TRADE NAME	Dumont	MODELS			CHASSIS
		Beaumont "21"	Flanders	Ridgewood "24"	
		Beverly "21"	Newport "24"	Riviera "21"	RA-400
		Biscayne "21"	Palm Beach "21"	Sherwood "24"	And
		Chatham "21"	Park Lane "21"	Versailles "21"	RA-401
		Essex "21"	Revere "21"	Westminister "21"	

NOTE: Beaumont "21" and Westminister "21" include Amp. Ch. RA-395, FM-AM Tuner and Record Changer #19035151.

MANUFACTURER	Allen B. Dumont Laboratories, Inc., 257 Sixteenth Avenue, Paterson, N.J.
TYPE SET	Television Receiver
TUBES	Eighteen
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING 175 Watts, 1.7 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF Oscillator is possible by removing the Channel Selector knob. Set the Fine Tuning at the center of its range. The adjustments are accessible, one at a time, as the Channel Selector is rotated. Adjust for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

Remove the wood screws holding the trim strip at the top edge of the safety glass. Tilt the top of the glass out and lift up to remove.

SPECIAL ADJUSTMENTS

A. AGC, Dumonitor And Fringe Lock
Turn the Fringe Lock control fully counterclockwise. Tune in the strongest TV station operating in the area. Turn the AGC control fully clockwise. Adjust the Dumonitor control until the picture begins to overload or a buzz is heard in the sound (if this condition does not appear set control fully clockwise). Back off from this setting SLIGHTLY until the picture becomes stable. Turn the AGC control slowly counterclockwis until the noise appearing in the picture just disappears.

B. Focus
Some versions may use a focus strap. The focus may be varied by the position of a strap on the base of the Picture Tube. The strap can be connected between pins 6 and 1, or 6 and 10. Readjust the Ion Trap for the best focus consistent with maximum brightness. Some versions have no provision for varying the focus.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

The Horizontal Frequency coil is used as the Horizontal Hold control. Adjust the Horizontal Hold until the picture synchronizes horizontally. (For location, see tube placement chart.) If satisfactory results cannot be obtained by the above adjustment see "Horizontal Sweep Circuit Adjustments" on page 20

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust the Ratio Detector secondary (All) located on top of chassis.

FUSES

One fuse is used for low voltage supply protection. (For location, see tube placement chart).

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

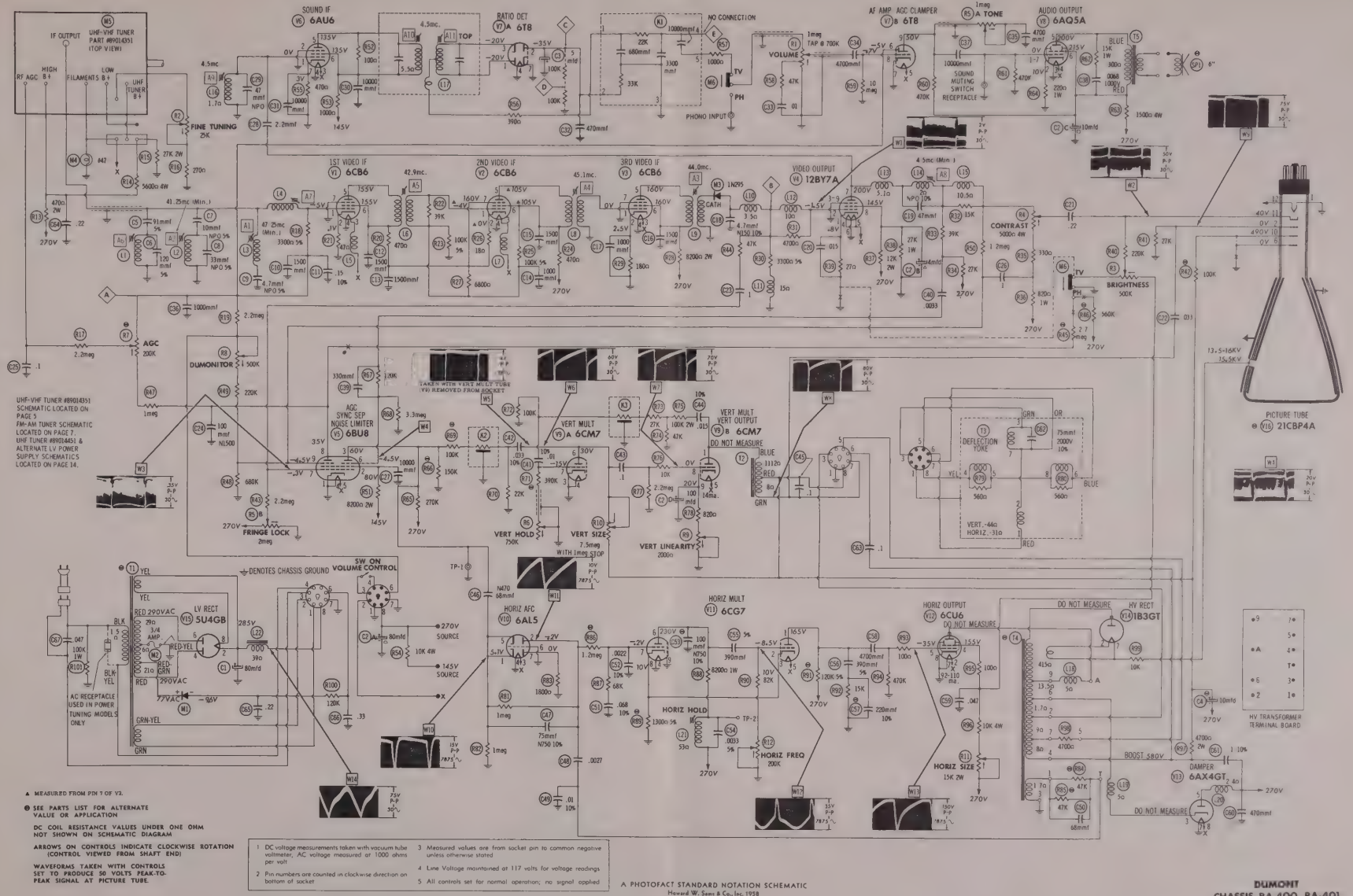
FOR SERVICE INFORMATION FOR AMPLIFIER CHASSIS RA-395 SEE PHOTOFACT SET 372 - FOLDER 3.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

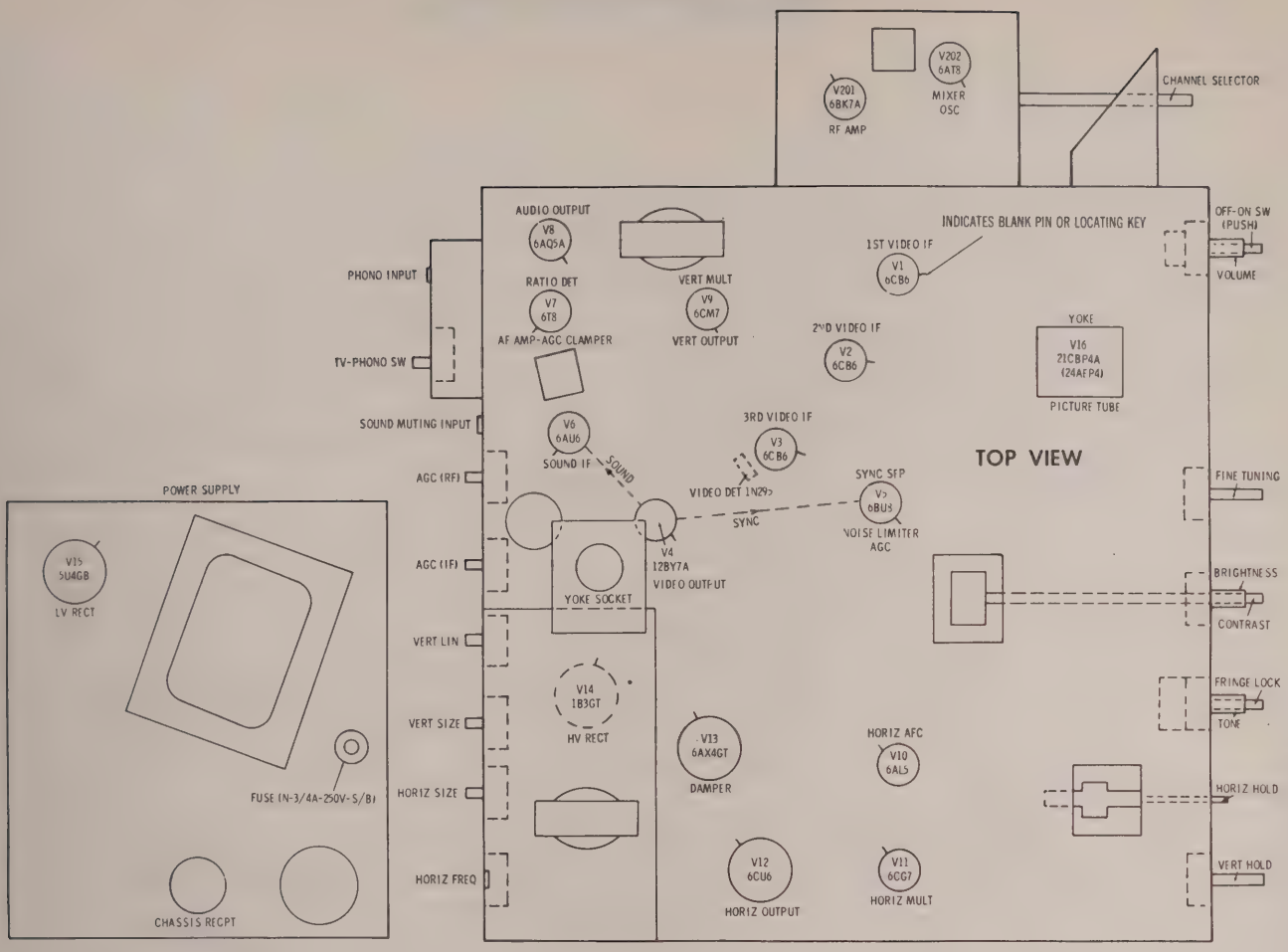
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America

H528

SET 405 FOLDER 2


SOUND IF V6 6AU6
RATIO DET V7A 6T8
NO CONNECTION
AF AMP AGC CLAMPER V7B 6T8
AUDIO OUTPUT V8 6AQ5A
1ST VIDEO IF V1 6CB6
2ND VIDEO IF V2 6CB6
3RD VIDEO IF V3 6CB6
VIDEO OUTPUT V4 12BY7A
VOLUME
TONE
CONTRAST
BRIGHTNESS
FINE TUNING
AGC
DUMONITOR
FRINGE LOCK
AGC SYNC SEP NOISE LIMITER V5 6BU8
VERT MULT V5A 6CM7
VERT MULT VERT OUTPUT V9B 6CM7
VERT HOLD
VERT SIZE
VERT LINEARITY
DEFLECTION YOKE
PICTURE TUBE V16 21CBP4A
LV RECT 5U4GB
HORIZ AFC V10 6AL5
HORIZ MULT 6CG7
HORIZ OUTPUT V12 6CU6
HV RECT V14 1B3GT
HORIZ HOLD
HORIZ FREQ
HORIZ SIZE
DAMPER 6AX4GT
BOOST 580V
SW ON VOLUME CONTROL
DENOTES CHASSIS GROUND
AC RECEPTACLE USED IN POWER TUNING MODELS ONLY
SOUND MUTING SWITCH RECEPTACLE
HV TRANSFORMER TERMINAL BOARD
DO NOT MEASURE
UHF-VHF TUNER #8901435I SCHEMATIC LOCATED ON PAGE 5
FM-AM TUNER SCHEMATIC LOCATED ON PAGE 7.
UHF TUNER #8901445 & ALTERNATE LV POWER SUPPLY SCHEMATICS LOCATED ON PAGE 14.
▲ MEASURED FROM PIN 7 OF V2.
⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1 DC voltage measurements taken with vacuum tube voltmeter, AC voltage measured at 1000 ohms per volt
2 Pin numbers are counted in clockwise direction on bottom of socket
3 Measured values are from socket pin to common negative unless otherwise stated
4 Line Voltage maintained at 117 volts for voltage readings
5 All controls set for normal operation; no signal applied
A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958
DUMONT
CHASSIS RA-400, RA-401

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound — Fuse (M2), V15

SWEEP FAILURE
No raster, has sound — V10, V11, V12, V13, V14, V16
No vertical deflection — V9
Poor vert. linearity or foldover — V9
Poor horiz. linearity or foldover — V11, V12, V13
Narrow picture — V11, V12, V13, V15
Vert. off freq. — V9
Horiz. off freq. — V11

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster — V1, V2, V3, Diode (M3), V4
No pic, no sound, has snow — V201, V202, V1
No pic, has sound, has raster — V4, V16
Has pic, no sound — V6, V7, V8
Overloaded picture — Rectifier (M1), V5

SYNC FAILURE
No vert. sync — V5
No horiz. sync — V5, V10
No vert. or horiz. sync — V5

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Remove the Horizontal Output and Damper tubes (V12 and V13). Connect the yoke, speaker and picture tube during alignment.

VIDEO IF ALIGNMENT

Connect the negative lead of a variable bias supply to point (A). Positive to chassis. For steps 1 thru 5, set bias for 4.5 volts.
For step 6, adjust bias for 3 volts.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The Sweep Generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough generator output to provide a usable indication on VTVM.
Use only Sweep Generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over Mixer-Osc. tube (V202). Low side to chassis.	Not used	47.25MC (Unmod)	Any non-interfering channel	USE VTVM. DC probe to point (B). Common to chassis. (Across Video Det. load)	A1	Adjust for MINIMUM deflection.
2.	"	"	"	41.25MC	"	"	A2	"
3.	"	"	"	44.0MC	"	"	A3	Adjust for maximum deflection.
4.	"	"	"	45.1MC	"	"	A4	"
5.	"	"	"	42.9MC	"	"	A5	"
6.	"	"	43.5MC (10MC Swp)	40.2MC 41.25MC 42.25MC 44.0MC 45.75MC 47.25MC	"	Vert. Amp. thru detector probe to pin 5 (plate) of 6CB6 (V1). Low side to chassis.	A6, A7, & Mixer Plate Coil	Adjust A6 for 40.2MC kickback peak as in Fig. 1. Adjust A7 and Mixer Plate Coil for response similar to Fig. 1 with markers as shown.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	.001mfd	High side to pin 2 (grid) of 12BY7 (V4). Low side to chassis.	Not used	4.5MC (400~ AM)	Any non-interfering channel	Vert. Amp. thru detector probe to pin 11 (cathode) of picture tube. Low side to chassis.	A8	Adjust for MINIMUM 400~ indication.

SOUND IF ALIGNMENT

Connect two matched 100K (± 1%) resistors in series from point (C) to chassis. The junction of these two resistors is alignment point (D) as shown on the schematic.
A TV station signal may be substituted for the signal generator if a generator of crystal accuracy is not available.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
8.	.001mfd	High side to pin 2 (grid) of 12BY7 (V4). Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	DC probe to point (C). Common to chassis.	A9, A10	Adjust for maximum deflection.
9.	"	"	"	"	DC probe to point (E). Common to point (D).	A11	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

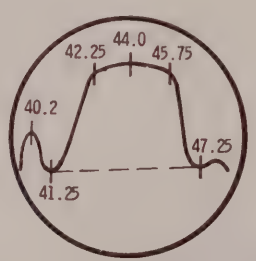
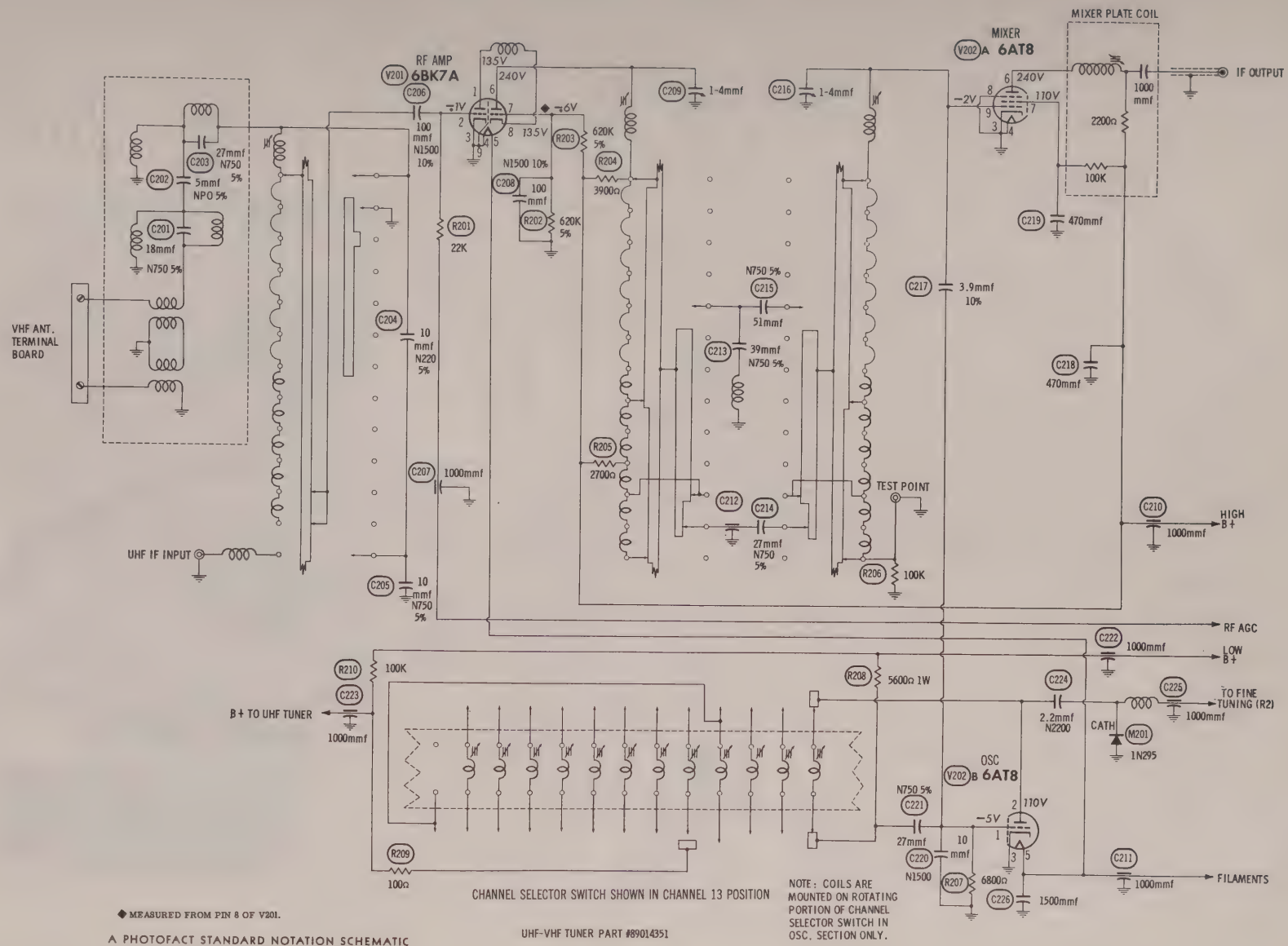


FIG.1



A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

UHF-VHF TUNER #89014351

DUMONT
CHASSIS RA-400, RA-401

TUNER PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amp.	6BK7A	

ITEM No.	USE	TYPE	NOTES
V202	Mixer-Osc.	6AT8	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	DUMONT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C201	18								N750 5%
C202	5								NPO 5%
C203	27				TCN-27				N750 5%
C204	10								N220 5%
C205	10			N750-DI 10	TCN-10				N750 5%
C206	100								N1500 10%
C207	1000			EF-001	MFT-1000			503C-D1	
C208	100								N1500 10%
C209	1-4				829-4		CT-551		
C210	1000			EF-001	MFT-1000			503C-D1	
C211	1000			EF-001	MFT-1000			503C-D1	
C212									
C213	39				TCN-39				N750 5%
C214	27				TCN-27				N750 5%
C215	51				TCN-51				N750 5%
C216	1-4				829-4		CT-551		
C217	3.9								10%
C218	470			BPD-00047	DD-471	BYA10T47	UC-5347	5GA-T47	
C219	470			BPD-00047	DD-471	BYA10T47	UC-5347	5GA-T47	
C220	10				TCL-10				N1500
C221	27				TCN-27				N750 5%
C222	1000			EF-001	MFT-1000			503C-D1	
C223	1000			EF-001	MFT-1000			503C-D1	
C224	2.2								N2200
C225	1000			EF-001	MFT-1000			503C-D1	
C226	1500			BPD-0015	DD-152	BYA10D15	DC5215	5HK-D15	

RESISTORS

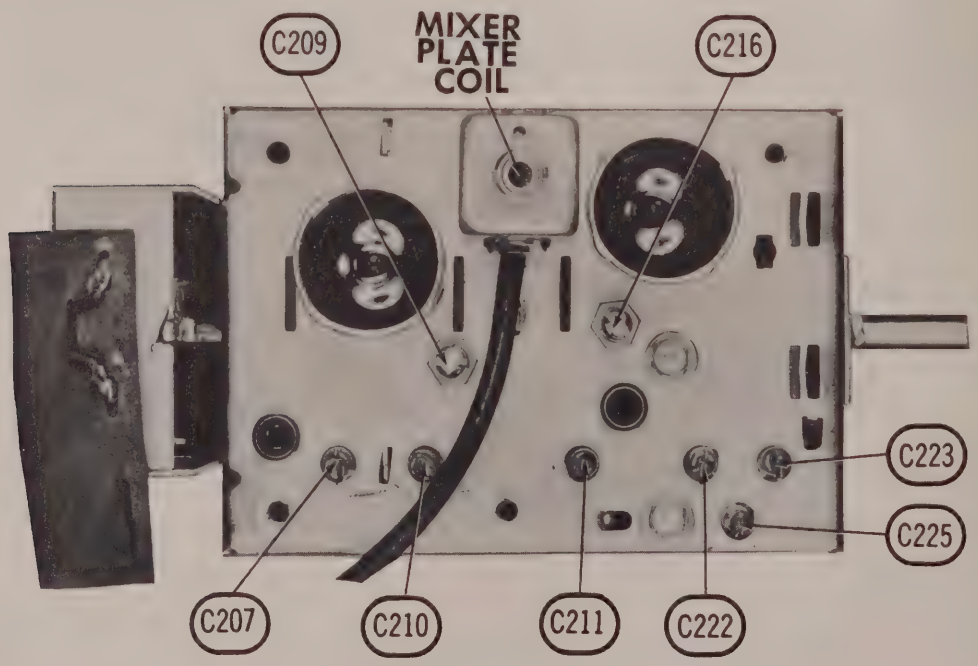
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		DUMONT PART No.	NOTES
	OHMS	WATT		
R201	22K			
R202	620K 5%			
R203	620K 5%			
R204	3900Ω			
R205	2700Ω			

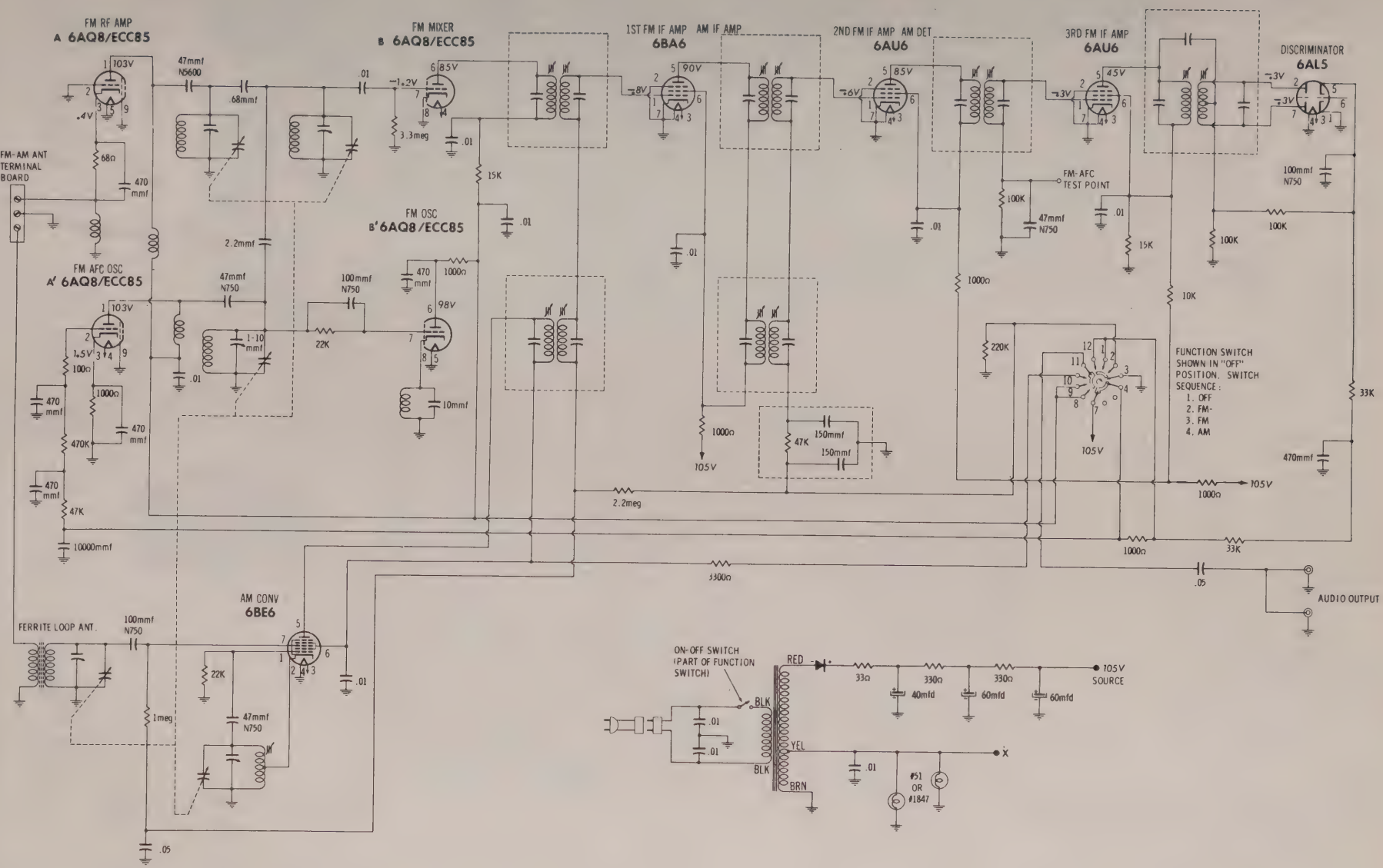
ITEM No.	RATING		DUMONT PART No.	NOTES
	OHMS	WATT		
R206	100K			
R207	6800Ω			
R208	5600Ω	1		
R209	100Ω			
R210	100K			

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		DUMONT PART No.	CBS PART No.	SYLVANIA PART No.	
M201	1N295	26001891	1N60	1N295	Fine Tuning (Pigtail)



RF TUNER—TOP VIEW



A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

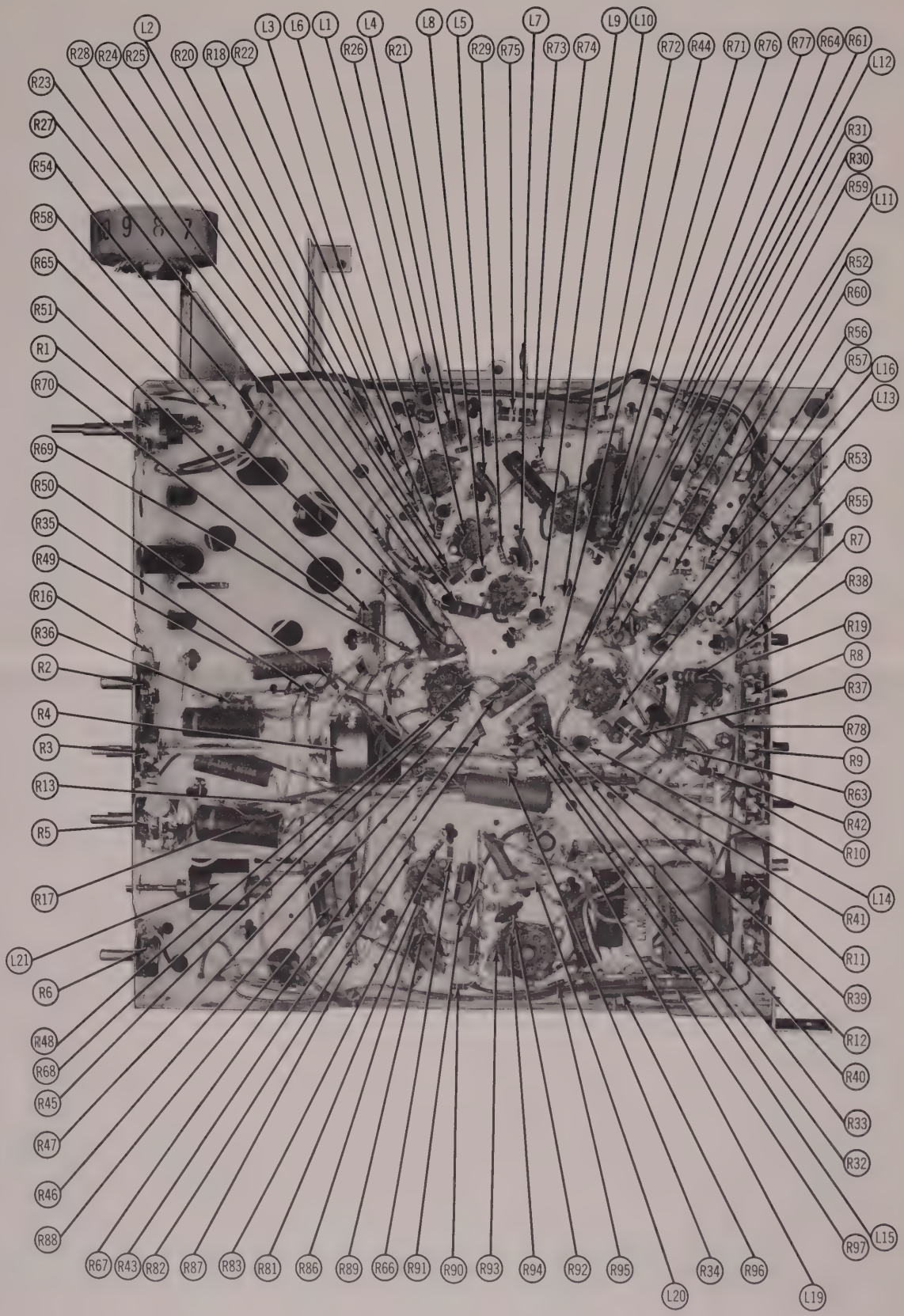
FM-AM TUNER SCHEMATIC

DUMONT
CHASSIS RA-400, RA-401

SET 405 FOLDER 2

PAGE 7

FOLDER 2



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

CHASSIS RA-400, RA-401

DUMONT

CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

SET 405 FOLDER 2

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	1st. Video IF Amp.	6CB6	
V2	2nd. Video IF Amp.	6CB6	
V3	3rd. Video IF Amp.	6CB6	
V4	Video Output	14BY7A	
V5	Sync Sep. -Noise Limiter - AGC	6BU8	
V6	Sound IF Amp.	6AU6	
V7	Ratio Det. -AF Amp. - AGC Clamper	6T8	

ITEM No.	USE	TYPE	NOTES
V8	Audio Output	6AQ5A	
V9	Vert. Mult. -Vert. Output	6CM7	
V10	Horiz AFC	6AL5	
V11	Horiz. Mult.	6CG7	
V12	Horiz Output	6CU8	
V13	Damper	6AX4GT	
V14	HV Rect.	1B3GT	
V15	LV Rect.	5U4GB	

PICTURE TUBE

ITEM No.	REPLACEMENT DATA: DUMONT PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	SYLVANIA PART No.	NOTES
V16	21CBP4A 1 24AEP4		21CBP4-A ① 21CBP4 24AEP4 ②	21CBP4A ② 21CBP4 24AEP4 ②	① Silverama" ③ ③ "Silver Screen 85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	VOLT.	DUMONT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	80	400	03190603	AFH-47	A0510	FP149	TD-80-450	S-240	TVL-1675
C2A	⌀80	400	03190546	AFH-47-85	D0660	FP431.7		Q-415	R2587 *
B	⌀4	400			BR445	TC70		MT-4504	
C	⌀10	400							
D	100	50							
C3	5	100	03138367	SRE150V5	BBR4-150	TC40	TD-4-150	MT-1504	TVA-1403
C4	10	350	03450421 ①	NP-PR8350	BBR2035 †	TC65 †	TD-20-350	MT-4520 †	R2286 *
				V10	BR2035 †	TC65 †	TD-40-350	MT-4520 †	

* Non-catalog item. † Connect negative leads. ① Semi-polarized unit.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	VOLT.	DUMONT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C5	91			1469-00009		22R5Q91		MS-491	5%
C6	120			1469-00012		22R5T12		MS-312	5%
C7	10			NPO-DI 10	DTZ-10				NPO 5%
C8	33				DTZ-33				NPO 5%
C9	4.7				DTZ-4R7				NPO 5%
C10	1500			BPD-0015	DD-152	CUB2P15	DCS215	5HK-D15	
C11	.15	200					GEM-3015		10%
C12	1500			BPD-0015	DD-152	BYA10D15	DCS215	5HK-D15	
C13	1500			BPD-0015	DD-152	BYA10D15	DCS215	5HK-D15	
C14	1000			BPD-001	DD-103	BYA5D1	DC521	5HK-D1	
C15	1500			BPD-0015	DD-152	BYA10D15	DCS215	5HK-D15	
C16	1500			BPD-0015	DD-152	BYA10D15	DCS215	5HK-D15	
C17	1000			BPD-001	DD-103	BYA5D1	DC521	5HK-D1	
C18	4.7								N150 10%
C19	47			NPO-DI 47	DTZ-47	C10Q47U			5TCC-Q47 NPO 10%
C20	.015	200		P288N-015		CUB6S15	GEM-4115	47M-S15	
C21	.22	400		P488N-22		CUB4P22	GEM-4042	47M-P22	
C22	.033	600		P688N-033		CUB6S33	GEM-6133	47M-S33	
C23	.1	200		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C24	100				TCL-100				N1500
C25	.1	200		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C26	.1	400		P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C27	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C28	2.2			NPO-SI 2.2	TCZ-2R2	CTA5V2JC		5TCCB-V22	
C29	47			NPO-DI 47	DTZ-47	C10Q47C		5TCC-Q47	NPO
C30	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C31	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C32	470			SI 470	D6-471	LT6T47	UC-5347	5GA-T47	
C33	.01	200		P288N-01	D6-103	CUB6S1	GEM-411	47M-S1	
C34	4700			BPD-0047	DD-472	BYA10D47M	UC-5247	5HK-D47	
C35	4700			BPD-0047	DD-472	BYA10D47M	UC-5247	5HK-D47	
C36	1000			BPD-001	DD-102	BYA5D1	DC521	5HK-D1	
C37	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C38	.0068	1000		P108N-0068	D6-682	CUB10D68	GEM-10268	10TM-D68	
C39	330			BPD-00033	DD-331	L10T33	UC-5333	5GA-T33	
C40	.0033	600		P688N-0033	D6-332	CUB6S33	GEM-6333	6TM-S33	
C41	.01	400					GEM-1611		10%
C42	.033	600							10%
C43	.1	600		P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	
C44	.015	600							10%
C45	.1	200		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C46	68								N470 10%
C47	75			N750-DI 75	DTN-75	C10Q75U	NT-5475	5TCU-Q75	N750 10%
C48	.0027	600			D6-272				
C49	.01	200		P288N-01	D6-103		GEM-1611		10%
C50	68			BPD-000068	DD-680	L10Q68	UC-5468	5GA-Q68	
C51	.068	200							10%
C52	.0022	400							10%
C53	100			N750-DI 100	DTN-100	C10TIU	NT-531	5TCU-T7	N750 10% ①
C54	.0033	400							5%
C55	390			1469-00039		5R5T39		MS-339	5%
C56	390			1469-00039		5R5T39		MS-339	5%
C57	220			1469-00022	MD-221	5R5T22		MS-322	10% ②
C58	4700			BPD-0047	DD-472	BYA10D47M	UC-5247	5HK-D47	
C59	.047	400		P488N-047	DF-503	CUB4S47	GEM-4147	47M-S47	
C60	470			BPD-00047	DD-471	L10T47	UC-5347	5GA-Q47	
C61	.1	600							10%
C62	75	1000				5VD20Q75		20GA-Q75	10%
C63	.1	200		P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C64	.22	400		P488N-22		CUB4P22	GEM-4042	47M-P22	
C65	.22	400		P288N-22		CUB2P22	GEM-2022	2TM-P22	
C66	.33	200		P288N-33			GEM-2033		
C67	.047	600		P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	

① Chassis without run numbers use 22mmf 10% in this application.
② Not used in chassis without run numbers.

CONTROLS

ITEM No	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: DUMONT PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	01071481					Volume-Tap ⑥ 700K
B	Switch							
R2A	25K	½	01071462	B-26	A47-25K-S	QU-130	TA253L	Fine Tuning
B	Shaft			Not Req.	F3-3	Not Req.	Not Req.	
R3A	500K	½	01071432	F1-40			FB55A	Brightness
B	Shaft			Not Req.			O8750	
R4A	5000Ω	4(WW)	01074048	WW-502	A10-5000	WP K5000		Contrast
B	Shaft			Not Req.	F3-3	Not Req.		
R5A	1meg	½	01071462	F1-53		QU-986	** UE3813	Tone
B	2meg	½		R2-67				Fringe Lock
R8A	750K	½	01071478	B-86	A47-750K-S	QU-136	U53	Vert. Hold
B	Shaft			Not Req.	F3-3	Not Req.	Not Req.	
R7A	200K	½	01056047	BX-46	A47-200K-S	BU-129	U43	AGC, Note 1
B	Shaft			Not Req.	F KB-1/4	SK3	Not Req.	
R8A	500K	½	01056043	BX-59	A47-500K-S	BU-133	PTA56L	Dumonitor
B	Shaft			Not Req.	F KB-1/4	SK3	Not Req.	
R9A	3000Ω	½	01056035	AB-8	A47-3000-S	BU-110	U8	Vert. Lin.
B	Shaft			AK-1	F KB-1/4	SK3	Not Req.	
R10A	7.5meg	½	01071091	AB-89 †	A47-7.5meg-S	BU-142 †	PTA56L †	Vert. Size with 1meg stop
B	Shaft			AK-1	F KB-1/4	SK3	Not Req.	
R11A	15K	2(WW)	01070521	WH-153	43C1-15K	WU-118	WF153	Horiz. Size
B	Shaft			Not Req.	Not Req.	SK3	Not Req.	
R12A	300K	½	01071041	AB-48	A47-300K-S	BU-129	U43	Horiz. Freq.
B	Shaft			AK-1	F KB-1/4	SK3	Not Req.	

† Use 1meg resistor in series with right hand terminal.
** "RTA-LOC" Equivalent: FB16A, QS625, RU261, BI062.
e "Concentrik" Equivalent: K-3 Kit, Base Elements & Shafts B13-137, P1-020 (Panel) B11-139, RI-103 (Rear)
■ Not available as a factory assembled control.
Note 1. Alternate Part #01058046.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING: OHMS	WATT	DUMONT PART No.	NOTES
R13	470Ω	2		
R14	5600Ω	4		
R15	47K	4		
R16	270Ω			
R17	2.2meg			
R18	3300Ω 5%			
R19	2.2meg			
R20	470Ω			
R21	47Ω			
R23	39K			
R33	100K 5%			
R24	470Ω			
R25	100K 5%			
R26	18Ω			
R27	6800Ω			
R28	6200Ω	2		
R29	180Ω			
R30	33000Ω 5%			
R31	4700Ω			
R32	15K			
R33	39K			
R34	27K			
R35	330Ω			
R36	820Ω	1		
R37	12K	3		
R38	27K	1		
R39	27Ω			
R40	220K			
R41	27K			
R42	100K			Note 1
R43	2.2meg			
R44	47K			
R45	2.7meg			Note 1
R46	560K			Note 1
R47	1meg			
R48	680K			
R49	220K			
R50	1.2meg			
R51	8200Ω	2		
R52	1000			
R53	10000			
R54	10K	4		
R55	470Ω			
R56	3900			
R57	1000			
R58	47K			
R59	10meg			
R60	470K			
R61	470K			
R62	15K	1		
R63	15000Ω	4		
R64	220Ω	1		
R65	270K			
R66	150K			Note 2
R67	130K			
R68	3.3meg			
R69	100K			Note 3
R70	22K			
R71	390K			Note 4
R72	100K			
R73	27K			
R74	47K			
R75	100K	2		
R76	10K			
R77	2.2meg			
R78	820Ω			
R79	560Ω			
R80	560Ω			
R81	1meg			
R82	1meg			
R83	1800Ω			
R84	47K			Note 5
R85	47K			Note 5
R86	1.2meg			Note 6
R87	68K			
R88	8200Ω	1		
R89	1300Ω 5%			Note 7
R90	82K			
R91	130K 5%			Note 8
R92	15K			
R93	100Ω			
R94	470K			
R95	100Ω			
R96	10K	4		
R97	4700Ω	2		
R98	4700Ω			
R99	10K			
R100	130K			
R101	100K	1		

Note 1. Not used in some versions.
Note 2. Some versions use 120K in this application.
Note 3. Some versions use 150K in this application.
Note 4. Some versions use 470K in this application.
Note 5. Some versions may use a single 15K 2W or 22K 1W resistor to replace R84 and R85.
Note 6. Some versions may use 820K in this application.
Note 7. Some versions may use 1500Ω 5% in this application.
Note 8. Some versions may use 100K 5% in this application.

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: DUMONT PART No.	QUAM PART No.	NOTES
SP1	6"	PM	3-4Ω	18003708 ①	6AL5	① Used in Chatham "21"
	4" x 6"			18003627 ②		② Used in Beverly "21", Newport "24"
	3½"			18003786 ③		③ Used in Essex "21", Palm Beach "21", Revere "21", Ridgewood "24"
	5"			18003737 ③		④ Essex "21", Palm Beach "21", Revere "21", Ridgewood "24", Beaumont "21", Biscayne "21", Parkiane "21", Versailles "21", Westminister "21"
	3½"			18003785 ③		⑤ Used in Beaumont "21", Biscayne "21", Parkiane "21", Versailles "21", Westminister "21"
	14" x 3"			18004121 ④		⑥ Used in Sherwood "24", Flanders "24"
	12"			1800 4111 ⑤		⑦ Two used in Sherwood "24", Flanders "24"
	8"			18003738 ⑤		⑧ Used in Beaumont "21" and Westminister "21" equipped with Amplifier RA-396.
	3½"			18003894 ⑦		⑨ Two used in Beaumont "21" and Westminister "21" equipped with Amplifier RA-396.
	10"			18003854 ⑧		
	5"			18004141 ⑨		
	Horn			18004131 ⑨		

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	REPLACEMENT DATA: DUMONT PART No.	Halldorson PART No	Merit PART No	Ram PART No	Stancor PART No	Thordorson PART No.	Triad PART No
T1	117V @1.7A	560VCT & 250A tap & 75VAC & .0005A	5V @2.5A	20011284 ①						
	SEC. 3	6.3V & 7A								

① Used in late production versions without power tuning. Late production power tuning models use Part #20011283. In early production chassis without power tuning Part #20011283 was used and Part #20011281 in power tuning versions. The early production units required a 47Ω 7W resistor in the B+ supply which must be removed if replacing with a late production unit.

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: DUMONT PART No	Halldorson PART No	Merit PART No	Ram PART No	Stancor PART No	Thordorson PART No	Triad PART No	NOTES
T2	Vert Output	20010452	2J806	A-3039	V312	VO-101	26S14	A-11VX	
T3A	Yoke-Horiz.(16MH)	21016691	DF607	MDF-92	Y90F19/43	DY-16A	Y-16	Y-41 &	
B	(90°)-Vert.(40MH)		1 ②	1 ②	1 ②	1 ②	1 ②	NW4 ②	
T4	Horiz. Output	20010613 ③		HVO-138	X51 *				
	Alt. Horiz. Output	20010613							

① Use original horizontal damping network, if necessary.
② Use original rear cover and centering device.
③ Changed in late production models to Part #20010613. When Part #20010613 is used, the total value of resistors R84 and R85 should equal 22K 1W.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordorson Replacement Connections	Triad Replacement Connections
9			9			
6			8 & 6			
2			8 & 6			
7			4			
4			3			
1			1			
3			3			

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	SEC.	REPLACEMENT DATA: DUMONT PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordorson PART No.	Triad PART No.	NOTES
T5	5800Ω	3-4Ω	20009797	Z1000	A-2990	AU-801	A-3877	24S81	S-3X	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: DUMONT PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	40.2MCCoil	21014941					
L2	41.25MC Trap	21014962	30-1049				
L3	47.25MC Trap	21016181	30-1049				
L4	1st. Video IF	21014972	17-4534	TV-131		VF-4	
L5	Fil. Choke		19-1001	BC-562	4804		1.4 Microhenries
L6	2nd. Video IF	20008996	17-4533	TV-130	6319	VF-3	
L7	Fil. Choke		19-1001	BC-562	4804		1.4 Microhenries
L8	3rd. Video IF	20008996	17-4533	TV-130	6319	VF-3	
L9	4th. Video IF	20008998	17-4534	TV-130	6219	VF-3	
L10	RF Choke	21013453		TV-192	6153		.51 Microhenries
L11	Shunt Peaking Coil	21014252	19-4201	TV-194	6154	VP-6	300 Microhenries
L12	Series Peaking Coil	21014251	19-3100	TV-194	6112		105 Microhenries
L13	RF Choke	21006370	19-1004	SW-831	4809		5.6 Microhenries ①
L14	4.5MC Trap	21013783	30-1004	TV-151	1469 *	SF-3	
L15	Series Peaking Coil	21014251	19-3100	TV-194	6112		105 Microhenries
L16	Sound IF	21013783	30-1004	TV-151	1469 *	SF-3	
L17	Ratio Det.	20009043	17-3497 ▲	TV-115 ▲	6105 ▲	SF-4 ▲	
L18	RF Choke	21006550			4811		8.2 Microhenries ③
L19	RF Choke	21006550			4811		8.2 Microhenries ③
L20	RF Choke	21006520		SW-631			4.7 Microhenries ②

① IRC Part #CLA.
② IRC Part #CL-1.
* Disregard tap.
▲ Use adapter plate.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.: PRI.	SEC.	REPLACEMENT DATA: DUMONT PART No.	Meissner PART No	Merit PART No	Miller PART No	Ram PART No	Thordorson PART No	NOTES
L21	53Ω		21016171	19-1576	TV-163	6210	H-104	H3-5	

FILTER CHOKE

ITEM No.	RATINGS: CURRENT (Measured)	DC RES.	INDUCTANCE (@ CURRENT 1000 ~)	REPLACEMENT DATA: DUMONT PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordorson PART No	Triad PART No
L22	.250A	39Ω	1.6 Hy	21014874	C5037	C-2996		C-2328	26C93	C-17X

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	DUMONT PART No.	REPLACEMENT DATA
K1	De-Emphasis	680mmf, 3300mmf, 10000mmf, 22K, 33K	68001671	
K2	Vert. Integrator		68001481	
K3	Vert. Feedback		68001483	

PARTS LIST AND DESCRIPTIONS (Continued)

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DUMONT PART No.	FEDERAL PART No.	GENERAL ELECTRIC PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	
M1	.0001A	26002661	1159 ①	CR20 ①		10 ①	① Selenium Type.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			DUMONT PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	N	3/4A 250V S/B	11006110		333.750 (N 3/4A-125V S/B)	346010	N 3/4	HN 1/2 to 3/4

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		DUMONT PART No.	CBS PART No.	SYLVANIA PART No.	
M3	1N295	26001891	1N60	1N295	Video Det. (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	DUMONT PART No.	NOTES
M4	Lamp		#47
M5	Tuner	89014351	UHF-VHF
	Tuner	89014451	UHF
	Tuner	99344123	UHF Plug-in Kit
M6	Switch	05004330	TV-Phono, Slide Type
	Switch	05012971	Power Tuning
	Switch	05013501	Cam Operated (Power Tuning)
	Motor	81004091	Includes gear box

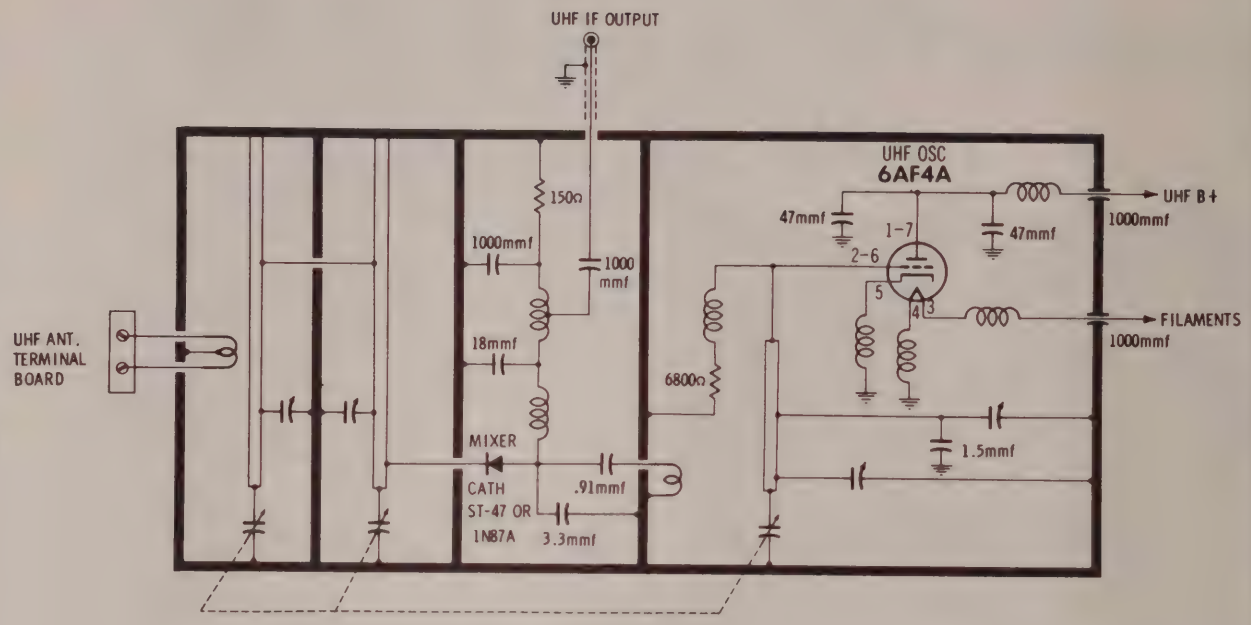
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	45006734	24" Models
Safety Glass	45006735	21" Models
Window	45008331	Front Panel, UHF
Window	45008341	Front Panel, VHF
Bezel	64006061	Beaumont, Westminister
Mask	64011817	24" Models, Flanders, Ridgewood, Sherwood
Mask	64011818	24" Models, Newport
Mask	64012195	21" Models, Beaumont, Biscayne, Parklane, Versailles, Westminister
Mask	64012196	21" Models, Beverly (Mahogany),Chatham, Essex, Palm Beach (Mahogany), Revere, Riviera
Mask	64012197	21" Models, Beverly (Blonde, Walnut), Palm Beach (Blonde)
Knob	45008221	Volume
Knob	45008291	Brightness and Tone
Knob	45008301	Horiz. Hold
Knob	45008311	Vert. Hold
Knob	45008321	Contrast
Knob	45008211	Pushbutton, On-Off, Beaumont, Biscayne, Flanders, Parklane, Ridgewood, Sherwood, Versailles, Westminister
Knob	45008212	Pushbutton, On-Off, Beverly (Mahogany), Chatham, Essex, Newport, Palm Beach (Mahogany), Revere, Riviera
Knob	45008213	Pushbutton, On-Off, Beverly (Blonde, Walnut), Palm Beach (Blonde)
Knob	45008242	Channel Selector, Beverly (Mahogany), Chatham, Essex, Newport, Palm Beach (Mahogany), Revere, Riviera
Knob	45008243	Channel Selector, Beverly (Blonde , Walnut), Palm Beach (Blonde)
Knob	45008231	UHF Tuning, Beaumont, Biscayne, Flanders, Parklane, Ridgewood, Sherwood, Versailles, Westminister
Knob	45008232	UHF Tuning, Beverly (Mahogany), Chatham, Essex, Newport, Palm Beach (Mahogany), Revere, Riviera
Knob	45008233	UHF Tuning, Beverly (Blonde, Walnut), Palm Beach (Blonde)
Knob	45008271	Pushbutton Power Tuning
Knob	45006503	Preamp. Control, Beaumont, Westminister
Knob	45008511	AM-FM Tuner, Beaumont, Westminister
Dial	45008251	VHF
Dial	45008261	UHF

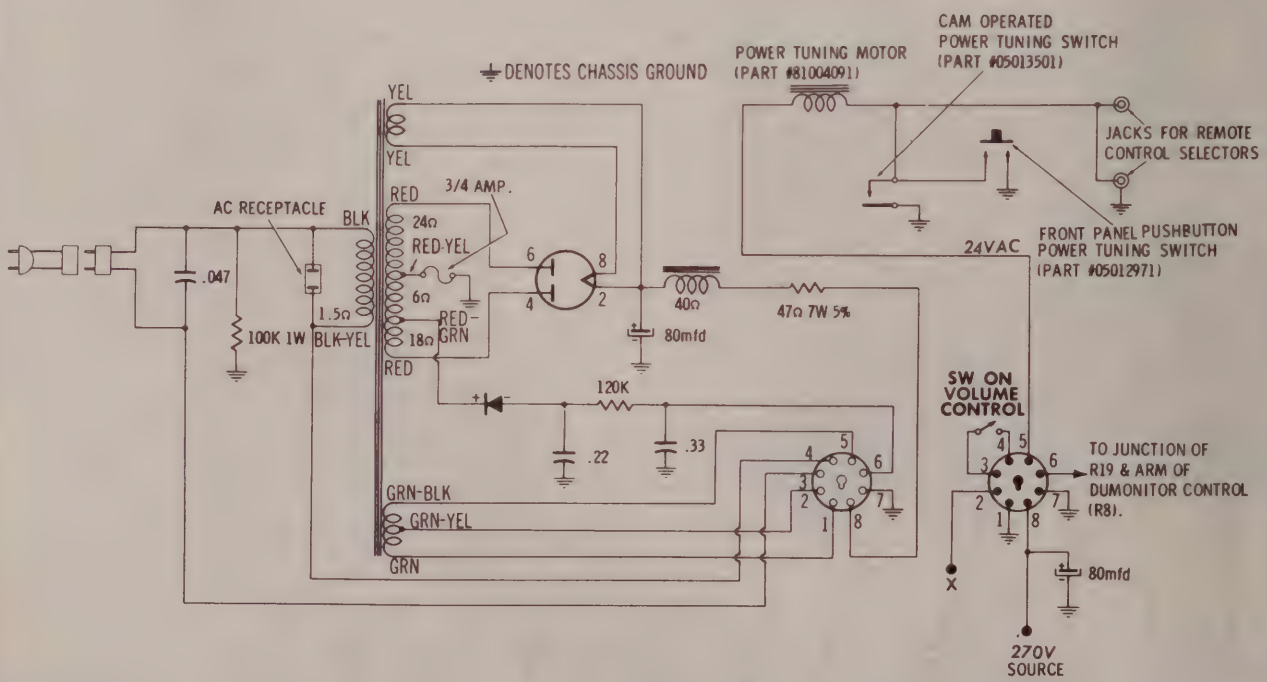
WIRING DATA

High Voltage Lead	Use BELDEN No.	8869
Shielded Hook-up Wire	Use BELDEN No.	8885 (Single Conductor)
		8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors
		8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No.	8874
300Ω Tuner Input Lead	Use BELDEN No.	8225
300Ω Antenna Lead-in	Use BELDEN No.	8230 or 8275
Antenna Rotor Cable	Use BELDEN No.	8464 (Flat) or 8484 (Round) - 4 Conductor
		8485 (Round) - 5 Conductor
		8488 (Round) - 8 Conductor



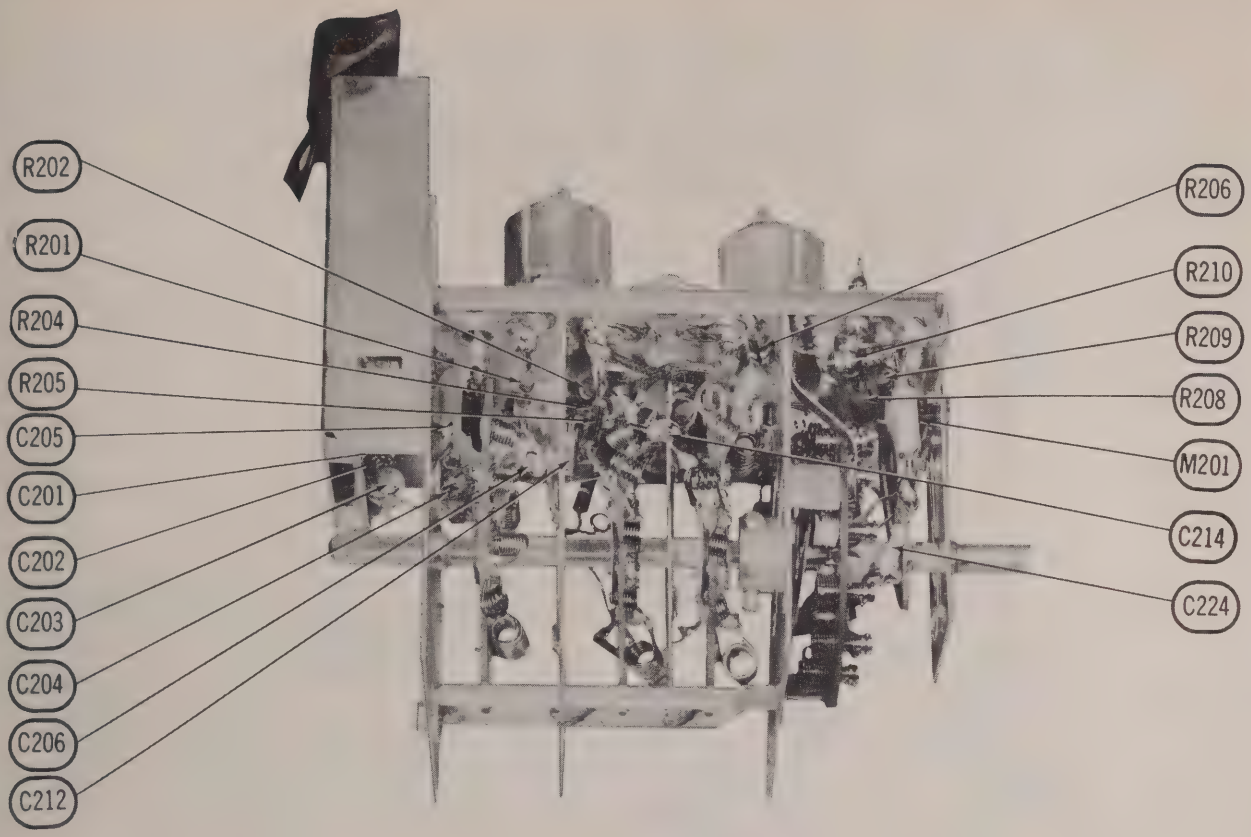
A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

UHF TUNER #89014451

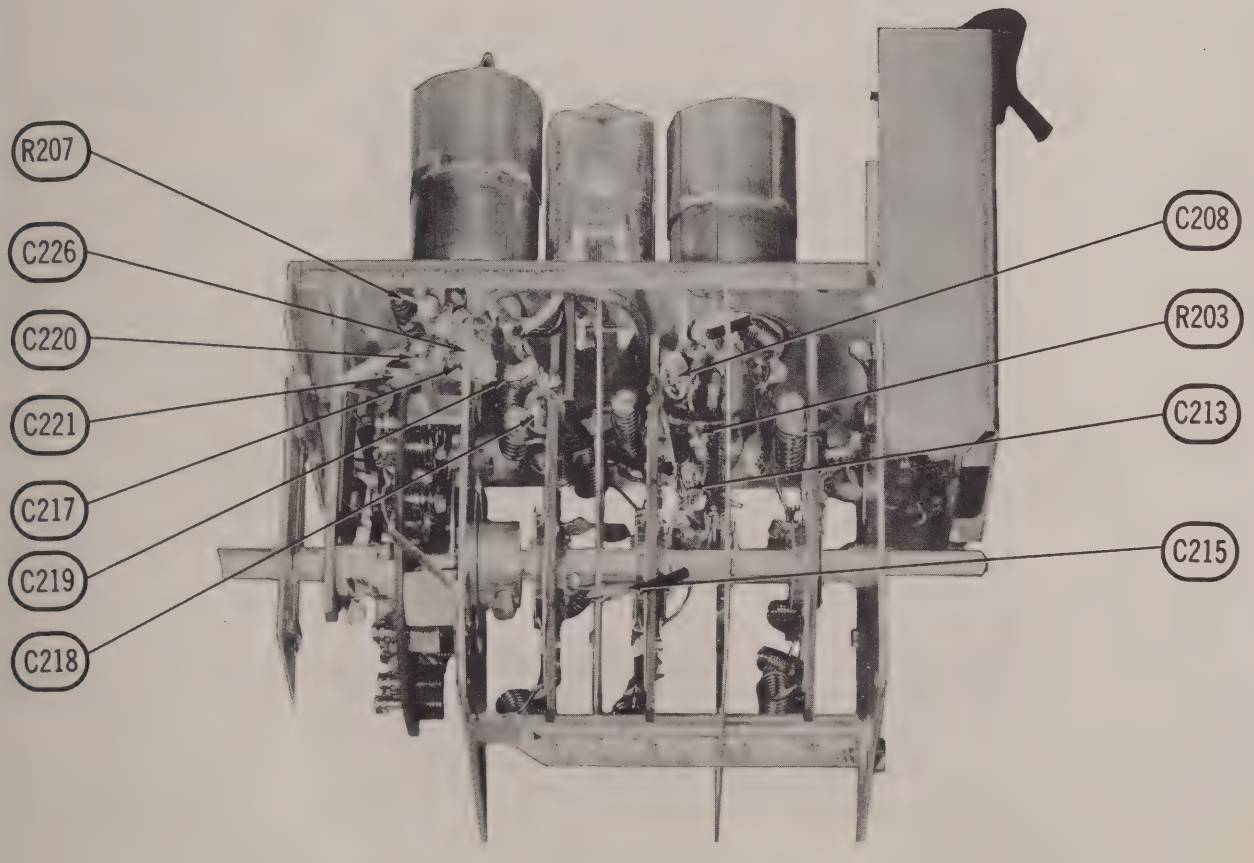


A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

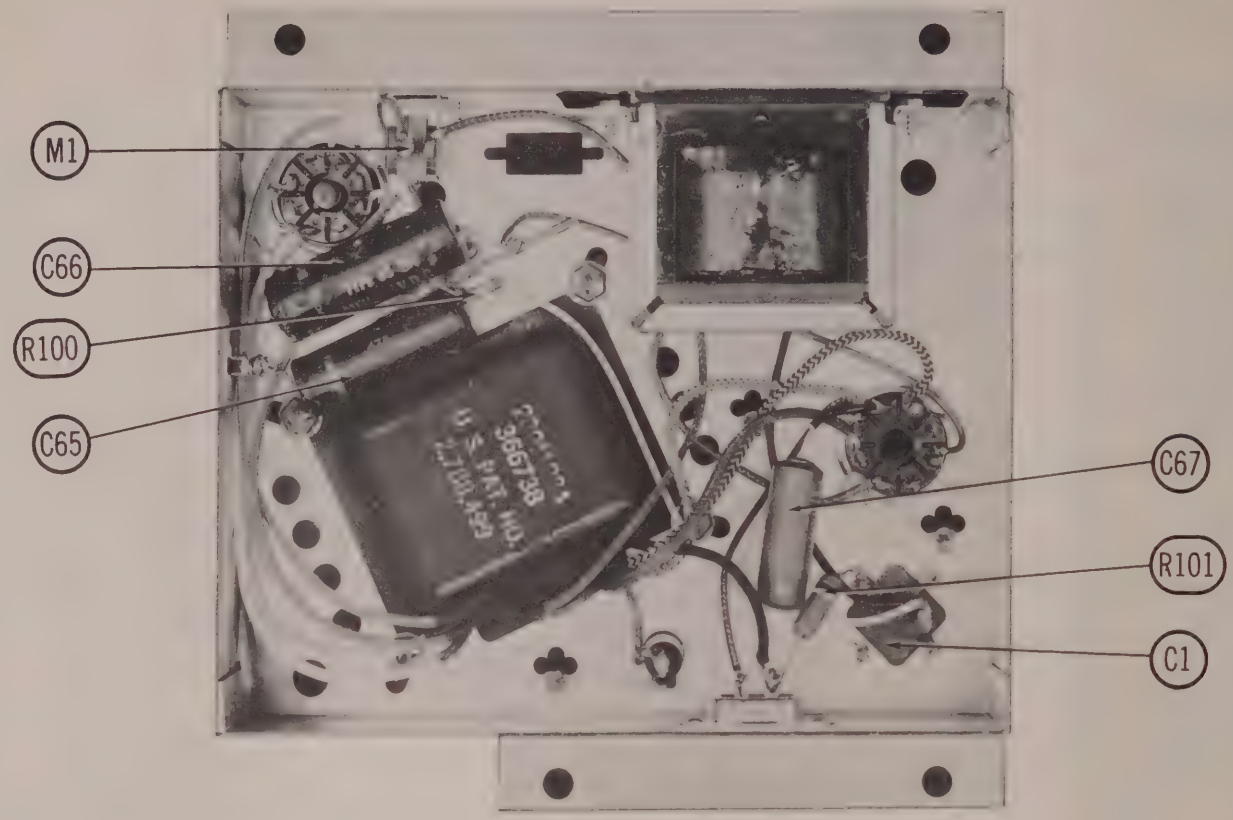
ALTERNATE LV POWER SUPPLY SCHEMATIC



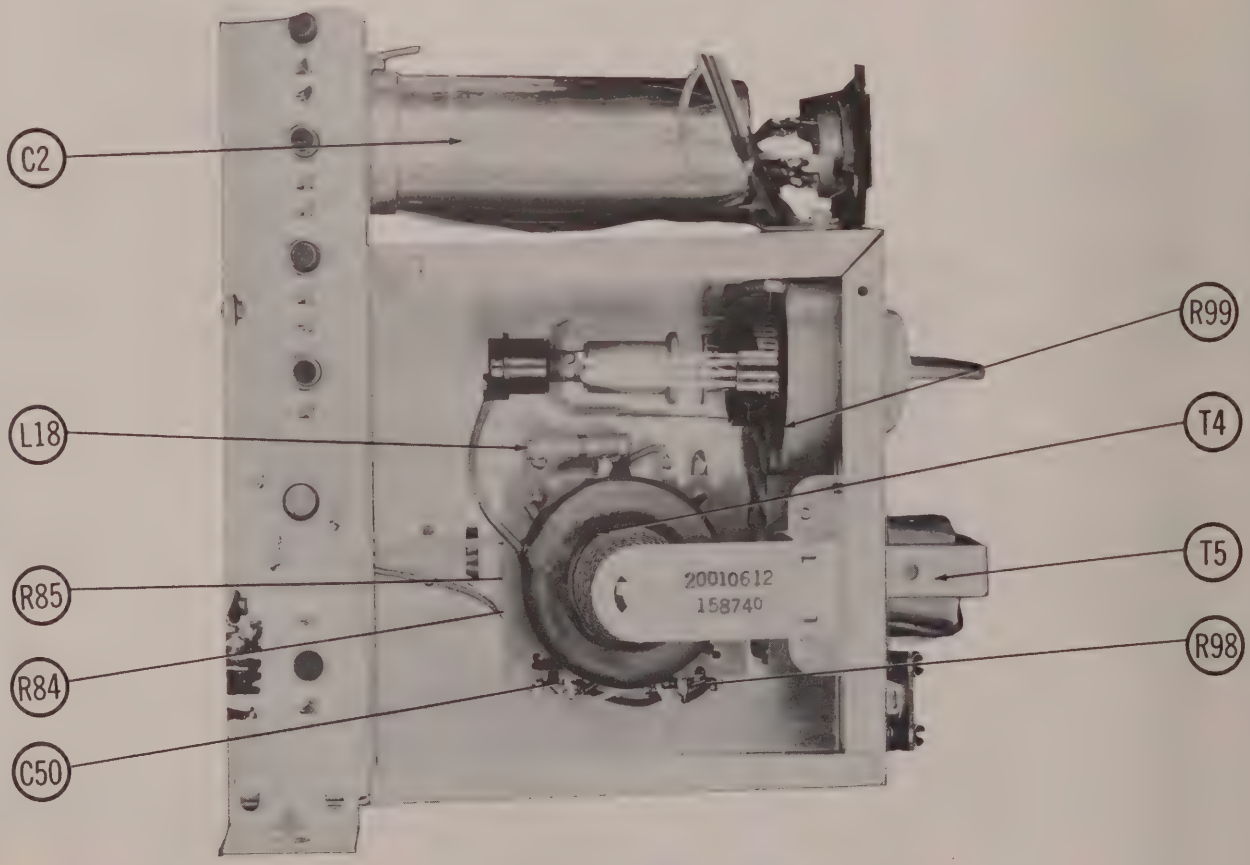
RF TUNER-LEFT SIDE



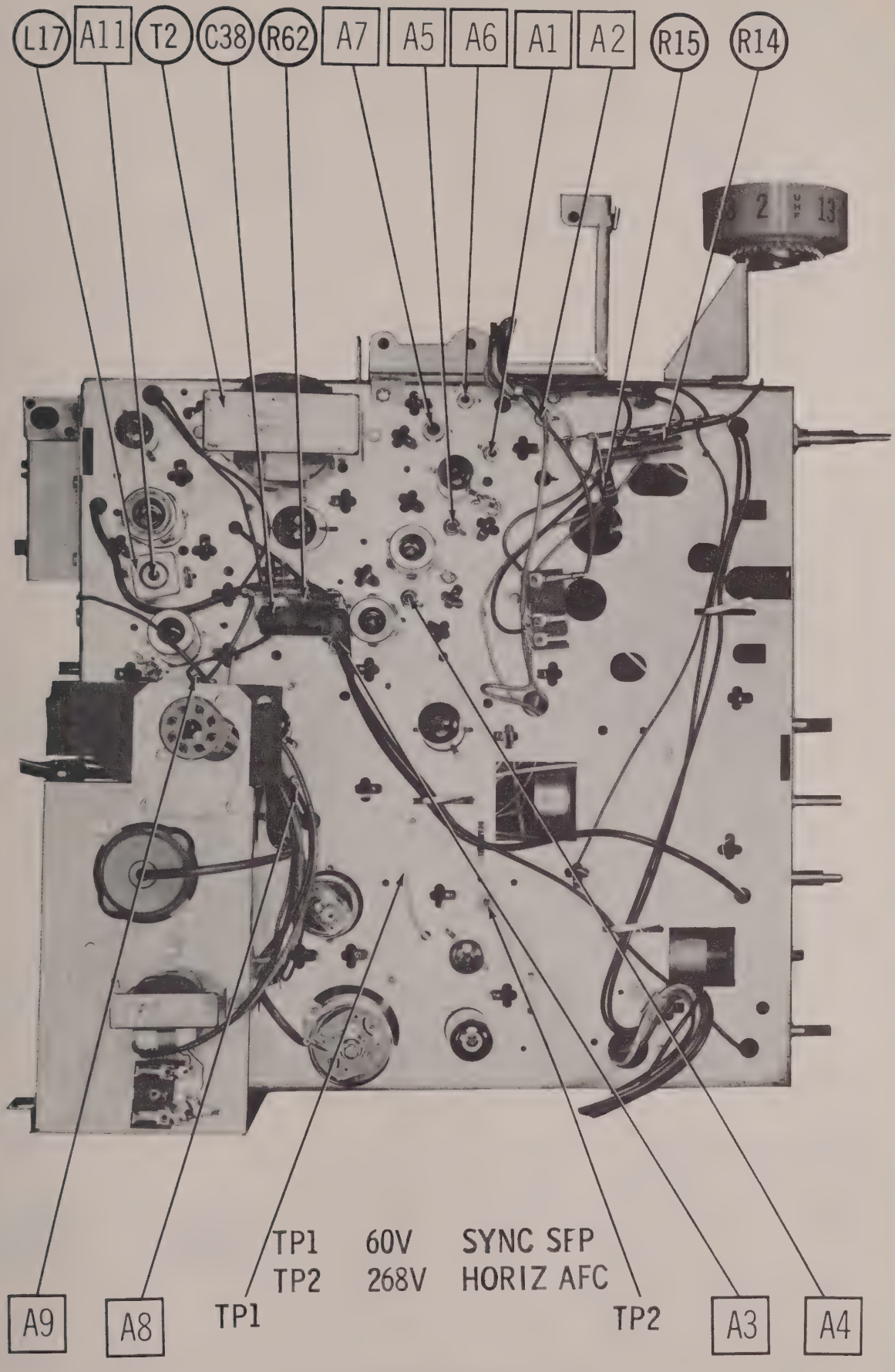
RF TUNER-RIGHT SIDE



POWER SUPPLY



HIGH VOLTAGE COMPARTMENT



CHASSIS TOP VIEW

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6CB6	1.7meg	47Ω	.1Ω	0Ω	▲ 470Ω	▲ 470Ω	0Ω		
V2	6CB6	57K	▲ 18Ω	.1Ω	0Ω	† 470Ω	† 470Ω	50K		
V3	6CB6	.1Ω	180Ω	.1Ω	0Ω	† 8200Ω	† 8200Ω	0Ω		
V4	12BY7A	27Ω	3300Ω	0Ω	.1Ω	.1Ω	0Ω	† 6100Ω	† 10K	0Ω
V5	6BU8	0Ω	† 18K	† 80K	0Ω	.1Ω	3.3meg	• 2.7meg	† 1.7meg	380K
V6	6AU6	1.7Ω	0Ω	.1Ω	0Ω	† 11K	† 11K	470Ω		
V7	6T8	INF	33K	INF	0Ω	.1Ω	17K	0Ω	10meg	† 470K
V8	6AQ5A	470K	220Ω	0Ω	.1Ω	† 1800Ω	† 1500Ω	470K		
V9	6CM7	‡ 5800Ω	NC	0Ω	0Ω	.1Ω	• ‡ 5.5meg	• 600K	2.2meg	• 1100Ω
V10	6AL5	1meg	2meg	.1Ω	0Ω	1meg	0Ω	1800Ω		
V11	6CG7	† 120K	• 100K	1300Ω	.1Ω	0Ω	† 8200Ω	3.2meg	1300Ω	0Ω
V12	6CU6	NC	.1Ω	NC	• † 12K	470K	TP	0Ω	0Ω	TOP CAP ‡ 26.5Ω
V13	6AX4GT	NC	NC	¶ 1.4meg	NC	† 2.4Ω	NC	0Ω	.1Ω	
V14	1B3GT		PINS	1 THRU 8	HAVE	INFINITE	RESISTANCE			TOP CAP ‡ 432Ω
V15	5U4GB	NC	¶ 20K	NC	29Ω	NC	28.5Ω	NC	¶ 20K	
V16	21CBP4A	0Ω	27K	PIN 6 0Ω	PIN 10 ‡ 100K	PIN 11 • 260K	PIN 12 .1Ω			
V201	6BK7A	INF	4meg	0Ω	0Ω	.1Ω	† 3900Ω	300K	INF	0Ω
V202	6AT8	6800Ω	† 12K	0Ω	0Ω	.1Ω	† 2200Ω	† 100K	0Ω	100K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.

■ THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.

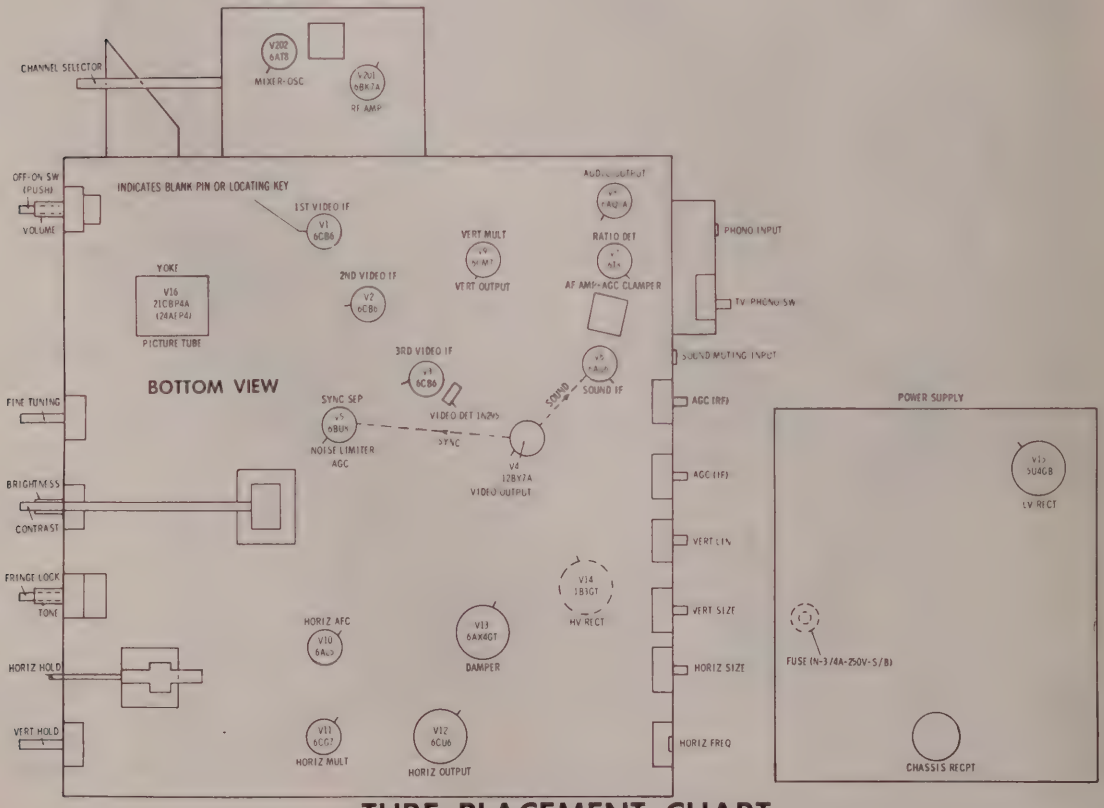
▲ MEASURED FROM PIN 7 OF V2.

† MEASURED FROM 270V SOURCE.

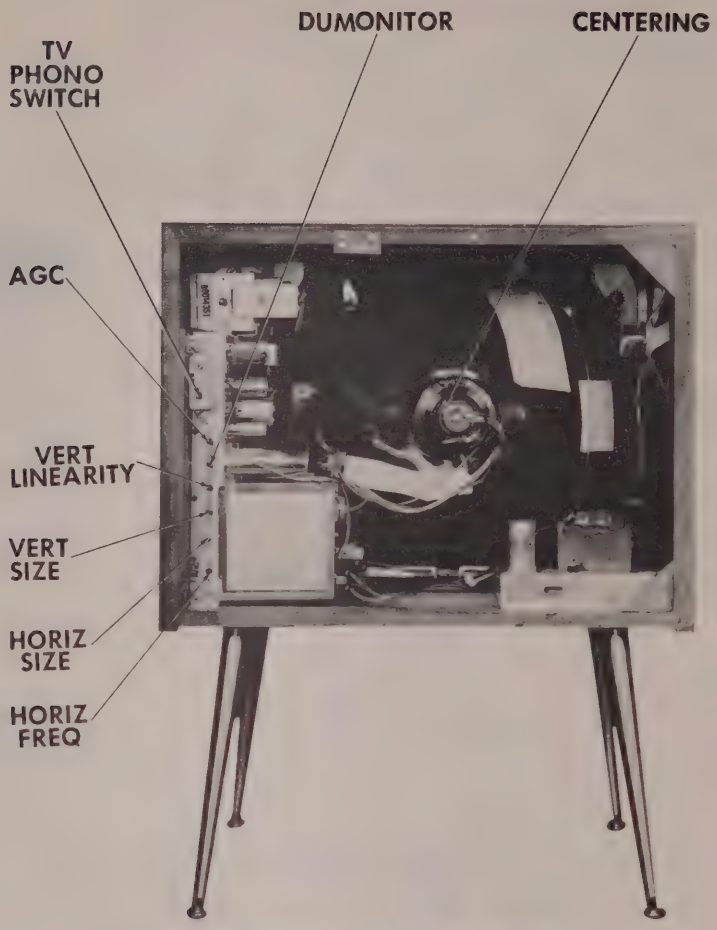
‡ MEASURED FROM PIN 3 OF V13.

NC NO CONNECTION.

TP TIE POINT.



TUBE PLACEMENT CHART



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and allow 15 minutes warm-up period. Remove the Horizontal Hold knob from the front panel.

Connect a clip lead from TP1 to chassis. Adjust the Vertical Hold for MINIMUM roll.

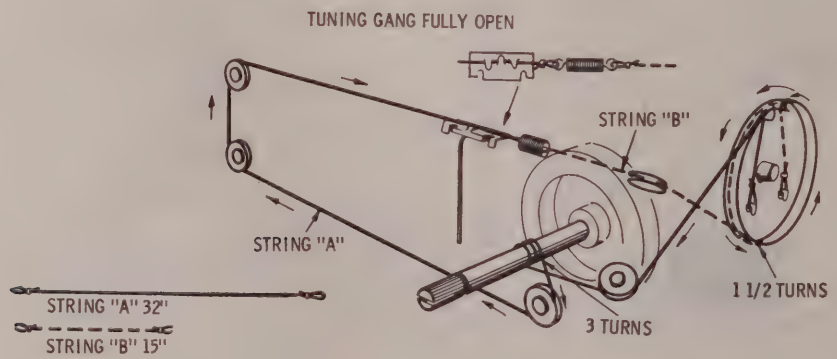
Turn the receiver off and connect a .47mfd 400V capacitor between TP2 and chassis.

Turn the set back on and allow it to warm-up. Adjust the Horizontal Frequency control (R12) until the picture synchronizes horizontally momentarily.

Remove the capacitor and adjust the Horizontal Hold until the picture again synchronizes horizontally momentarily.

Remove the clip lead between TP1 and chassis. Replace the Horizontal Hold knob.

Adjust the Horizontal Size control (R11) for a picture slightly wider than necessary to fill the picture mask horizontally.



AM-FM TUNER DIAL CORD

SET 405 FOLDER 3

TRUETONE MODELS 2DC1840B, 41B, 42B, 43B, 44B, 45B, 2DC2840B, 41B, 42B, 43B

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 4 push-on type knobs from the front. Remove 2 metal screws under the Channel Selector holding the knob escutcheon. Remove escutcheon and 4 more knobs.

2. Remove 8 wood screws holding the rear cover. Remove the rear cover.

3. Loosen the 2 wood screws holding the antenna terminal board and remove the board.

4. Remove the speaker leads.

5. Remove 1 wood screw holding the side chassis brace.

6. Remove 2 metal screws holding the top chassis brace.

7. Remove 4 chassis bolts from the bottom.

8. Remove the chassis.

MODEL 2DC1840B

TRADE NAME	Truetone	MODELS
		2DC1840B, 2DC1841B, 2DC1842B, 2DC1843B, 2DC1844B, 2DC1845B, 2DC2840B, 2DC2841B, 2DC2842B, 2DC2843B
SUPPLIER	Western Auto Supply Co., 2107 Grand Avenue, Kansas City, Mo.	
TYPE SET	Television Receiver	
TUBES	Nineteen	
POWER SUPPLY	110-120 Volts AC, 60 Cycle	RATING 176 Watts, 1.66 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)	

SERVICING IN THE FIELD

TUNER OSCILLATOR ADJUSTMENTS

Touch-up adjustment of the VHF Oscillator is possible by removing the Channel Selector and Fine Tuning knobs. Set the Fine Tuning at the center of its range. The adjustments are accessible, one at a time, as the Channel Selector is rotated. Adjust for best picture and sound.

PICTURE TUBE SAFETY GLASS CLEANING

Remove 5 wood screws from the trim strip at the top edge of the safety glass. Tilt the top of the glass out and lift up to remove.

SPECIAL ADJUSTMENTS

A. Focus
Adjust the Beam Alignment magnet on the neck of the Picture Tube for best focus.

B. Range
Observe the picture and advance the Range control to a point where the picture distorts or a buzz is heard in the sound. Back off from this setting until the picture becomes stable with no noise in the sound.

C. Sync Stab.
Adjust picture to lock in with hold controls. If picture jitters, tears, etc. adjust Sync Stab. until stable. Readjust the hold controls and check operation on all channels in the area.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

For adjustment of the Horizontal Oscillator, it is necessary to remove the rear cover and supply power to set. Set the Horizontal Hold at the center of its range and adjust the Horizontal Frequency slug (B1) until the picture synchronizes horizontally. (For location, see tube placement chart.)

SOUND IF DETECTOR BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust the buzz control for MINIMUM buzz and maximum sound. (For location, see tube placement chart.)

FUSES

One fuse is used for low voltage supply protection. (For location, see tube placement chart.)

CENTERING

Centering is accomplished mechanically by adjusting two magnetic rings around the neck of the picture tube. Rotate the two rings around the neck of the tube until the picture is properly centered.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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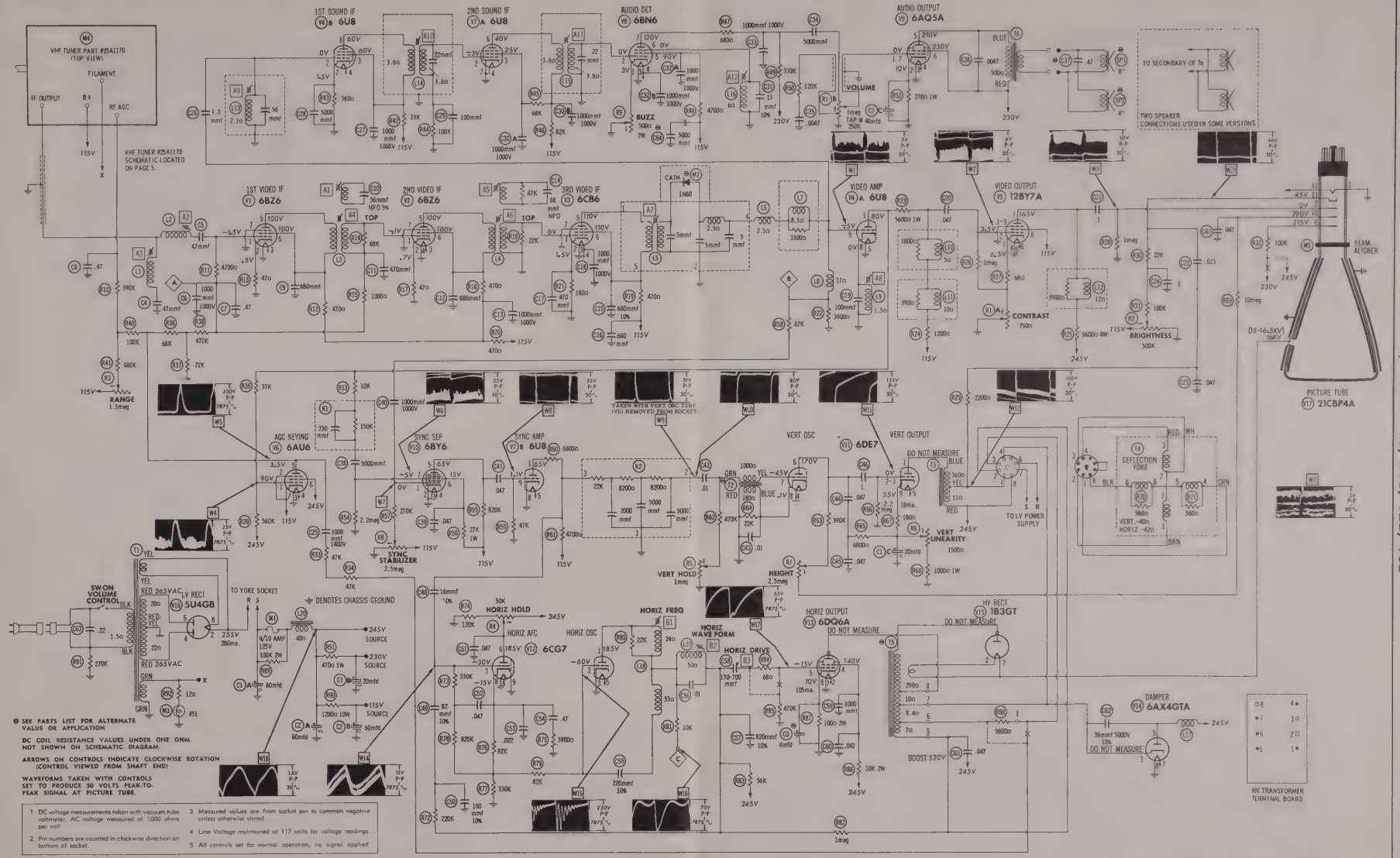
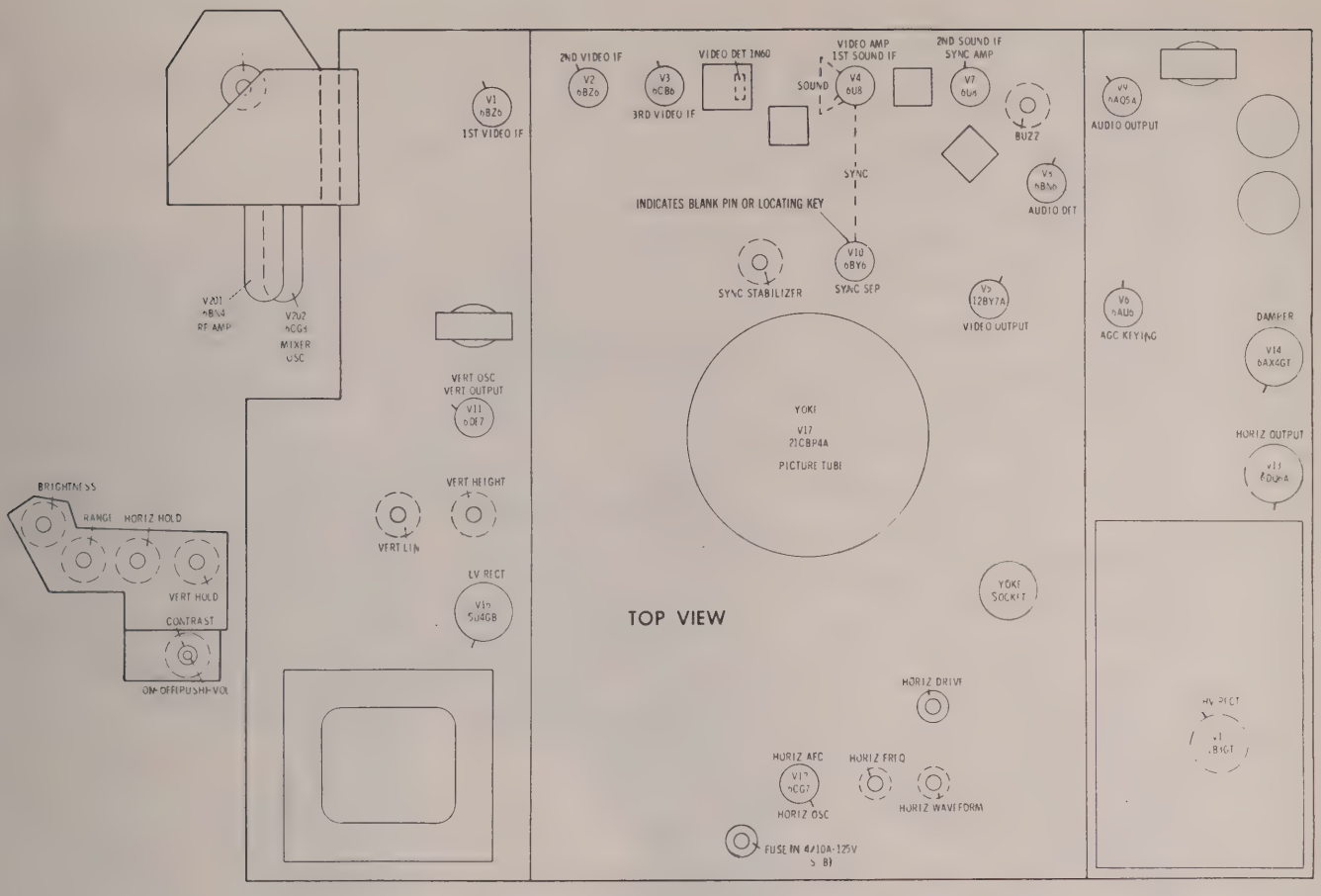

VHF TUNER PART #25A1170 (TOP VIEW)
FILAMENT
IF OUTPUT
B+
RF AGC
VHF TUNER #25A1170 SCHEMATIC LOCATED ON PAGE 5.
1ST SOUND IF V4B 6U8
2ND SOUND IF V7A 6U8
AUDIO DET V8 6BN6
AUDIO OUTPUT V5 6AQ5A
VOLUME
TO SECONDARY OF To
TWO SPEAKER CONNECTIONS USEDIN SOME VERSIONS
1ST VIDEO IF V1 6BZ6
2ND VIDEO IF V2 6BZ6
3RD VIDEO IF V3 6CB6
CATH
VIDEO AMP V4A 6U8
VIDEO OUTPUT V5 T2BY7A
CONTRAST
BRIGHTNESS
BEAM ALIGNER
PICTURE TUBE V17 21CBP4A
AGC KEYING V6 6AU6
SYNC SEP V10 6BY6
SYNC AMP V7B 6U8
TAKEN WITH VERT OSC TUBE (V11) REMOVED FROM SOCKET
VERT OSC V11 6DE7
VERT OUTPUT
DO NOT MEASURE
DEFLECTION YOKE
VERT. -40a HORIZ -42a
TO LV POWER SUPPLY
RANGE 1.5meg
SYNC STABILIZER 2.5meg
VERT HOLD 1meg
HEIGHT 2.5meg
VERT LINEARITY
SW ON VOLUME CONTROL
LV RECT V16 5U4GB
TO YOKE SOCKET
DENOTES CHASSIS GROUND
HORIZ HOLD
HORIZ AFC
HORIZ OSC V12 6CG7
HORIZ FREQ
HORIZ WAVE FORM
HORIZ DRIVE
HORIZ OUTPUT V13 6DQ6A
HV RECT V15 1B3GT
DAMPER V14 6AX4GTA
BOOST 520V
HV TRANSFORMER TERMINAL BOARD
245V SOURCE
230V SOURCE
115V SOURCE
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1 DC voltage measurements taken with vacuum tube voltmeter, AC voltage measured at 1000 ohms per volt
2 Pin numbers are counted in clockwise direction on bottom of socket.
3 Measured values are from socket pin to common negative unless otherwise stated
4 Line Voltage maintained at 117 volts for voltage readings
5 All controls set for normal operation, no signal applied

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

TRUETONE MODELS 2DC1840B, 41B, 42B, 43B, 44B, 45B, 2DC2840B, 41B, 42B, 43B

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

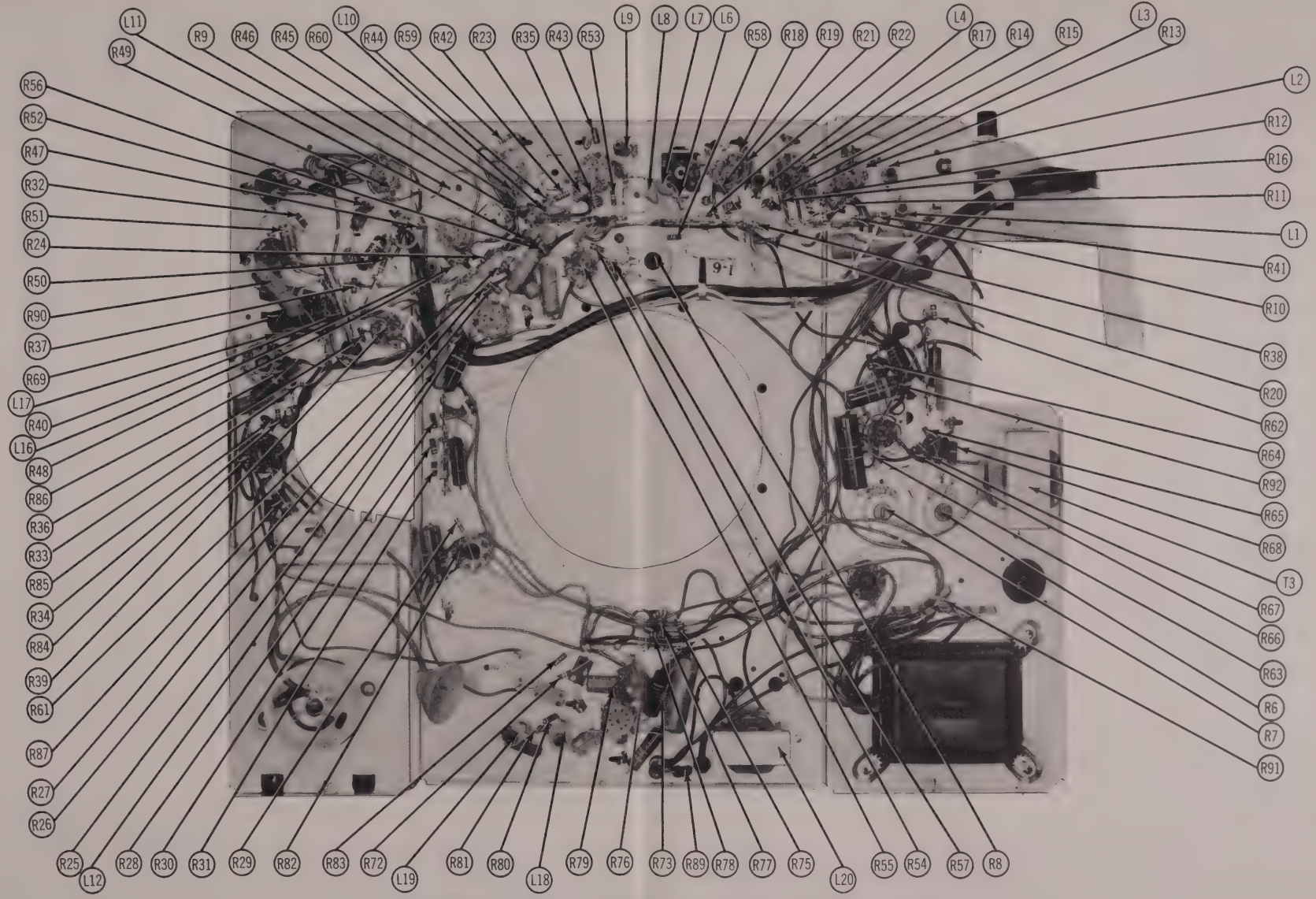
The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound Fuse (M1), V16

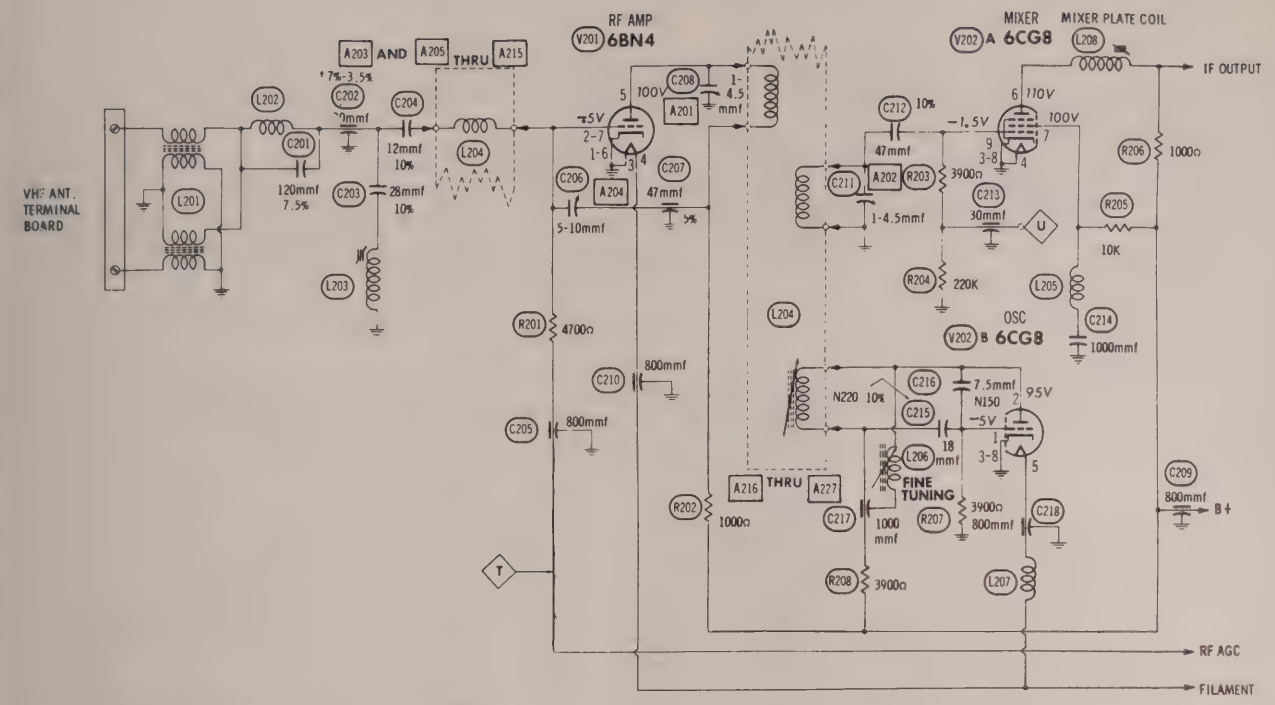
SWEEP FAILURE
No raster, has sound V12, V13, V14, V15, V17
No vertical deflection V11
Poor vert. linearity or foldover V11
Poor horiz. linearity or foldover V12, V13, V14
Narrow picture V12, V13, V14, V16
Vert. off freq. V11
Horiz. off freq. V12

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (M2)
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V5, V17
Has pic, no sound V4, V7, V8, V9
Overloaded picture V6

SYNC FAILURE
No vert. sync V10, V7
No horiz. sync V10, V7
No vert. or horiz. sync V10, V7

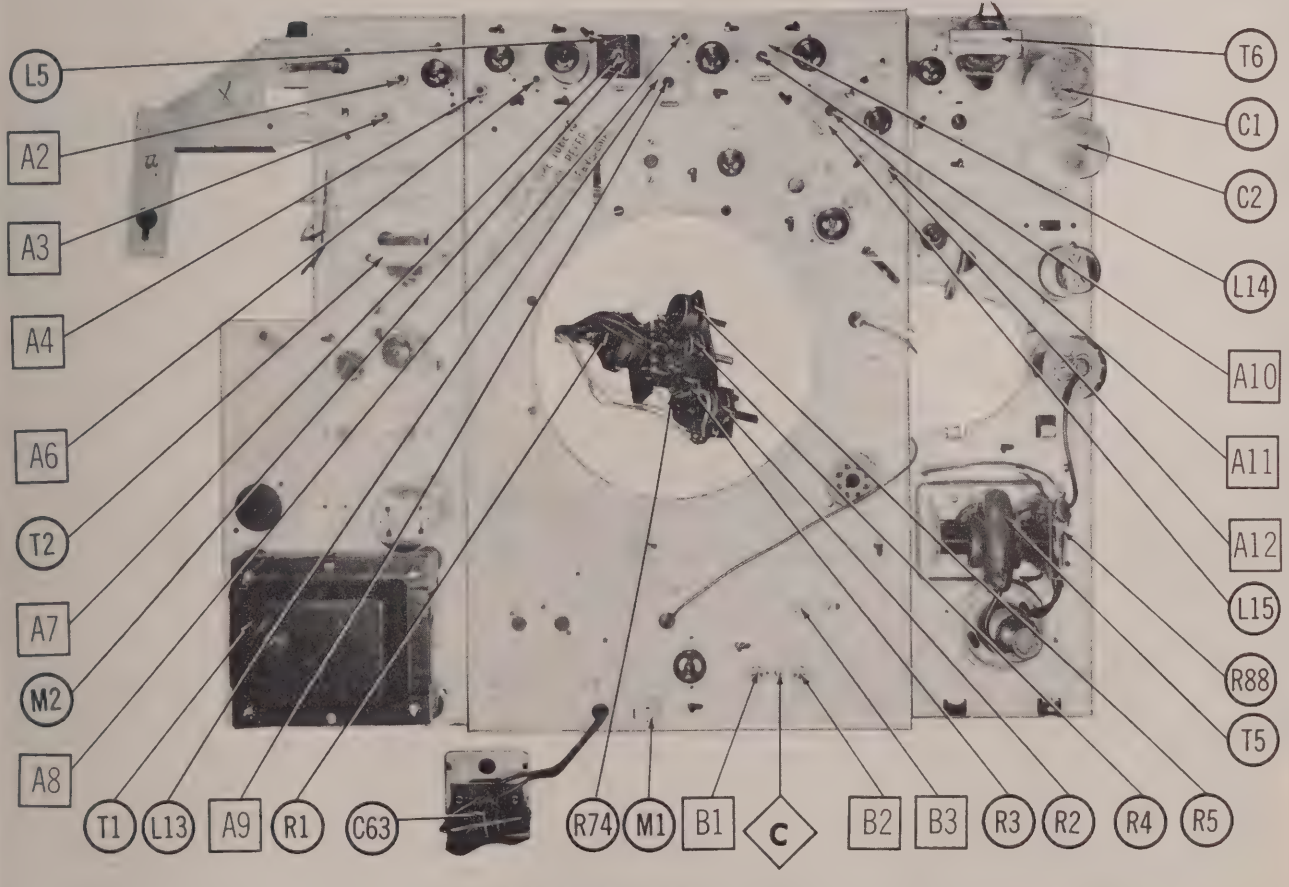


CHASSIS BOTTOM VIEW—RESISTOR INDUCTOR IDENTIFICATION



A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

VHF TUNER # 25A1170



CHASSIS TOP VIEW

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.

VHF RF AND MIXER ALIGNMENT

Connect the negative lead of a 2.5 volt bias supply to point Ⓣ thru a 10K resistor. Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The Sweep Generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough Sweep Generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K across video detector load.	A201, A202, A203	Adjust A201, A202 and A203 for maximum amplitude and symmetry with markers as shown in Fig. 201.
2.	"	"	"	"	"	Vert. Amp. thru detector probe (Fig. 202) to plate of 1st. Video IF. Low side to chassis.	A204	Adjust A204 to obtain MINIMUM response on the scope. Repeat step 1.
3.	"	"	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 10K across video detector load.	A205	Adjust for maximum amplitude of response similar to Fig. 201.
			207MC	205.25MC 209.75MC	12		A206	
			201MC	199.25MC 203.75MC	11		A207	
			189MC	187.25MC 191.75MC	9		A208	
			183MC	181.25MC 185.75MC	8		A209	
			177MC	175.25MC 179.75MC	7		A210	
			85MC	83.25MC 87.75MC	6		A211	
			79MC	77.25MC 81.75MC	5		A212	
			69MC	67.25MC 71.75MC	4		A213	
			63MC	61.25MC 65.75MC	3		A214	
			57MC	55.25MC 59.75MC	2		A215	

VHF OSCILLATOR ALIGNMENT

Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading. (Approximately -4.5V)
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The Sweep Generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the Fine Tuning to the center of its range.
Use only enough Sweep Generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K across video detector load.	A216	Adjust to place sound marker in trap notch as in Fig. 203. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A217	
			201MC	199.25MC 203.75MC	11		A218	
			195MC	193.25MC 197.75MC	10		A219	
			189MC	187.25MC 191.75MC	9		A220	
			183MC	181.25MC 185.75MC	8		A221	
			177MC	175.25MC 179.75MC	7		A222	
			85MC	83.25MC 87.75MC	6		A223	
			79MC	77.25MC 81.75MC	5		A224	
			69MC	67.25MC 71.75MC	4		A225	
			63MC	61.25MC 65.75MC	3		A226	
			57MC	55.25MC 59.75MC	2		A227	

TRAP ADJUSTMENT

Some types of RF interference can be reduced by adjusting L203. Tune in the station which has interference. Observe the picture and adjust L203 for MINIMUM interference.

FIG. 201

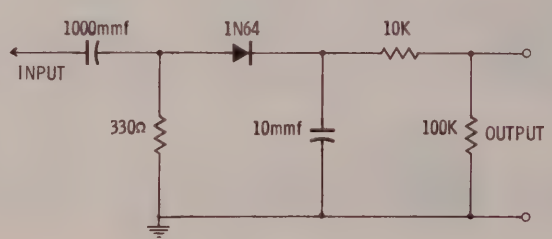


FIG. 202

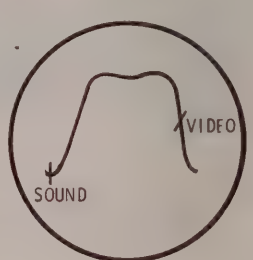


FIG. 203

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

USE AN ISOLATION TRANSFORMER TO PROTECT THE TEST EQUIPMENT.
The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.

VIDEO IF ALIGNMENT

Connect the negative lead of a 1.5 volt bias supply to point (A). Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over mixer-osc. tube (V202). Low side to chassis.	44.0MC (10MC Swp)	47.25MC	Any non-interfering channel	Vert. Amp. thru det. probe (Fig. 1) to pin 5 (plate) of 3BZ6 (V1). Low side to chassis.	A1	Adjust to place marker in trap notch as in Fig. 2.
2.	"	"	"	41.25MC 45.75MC 47.25MC	"	"	A2, A3, & Mixer Plate Coil	Adjust for response similar to Fig. 2. Mixer plate coil and A2 affects the shape of the top. A3 is adjusted to position the 41.25MC marker. This adjustment must be made correctly or the sound rejection will not be correct. The 45.75MC marker must be exactly on peak.
3.	"	"	"	42.8MC	"	Vert. Amp. thru 10K to point (B). Low side to chassis. DC probe of VTVM thru 10K to same point. Common to chassis. (Across video det. load).	A4	Increase bias at point A to 4.5 volts. Adjust sweep output for -2 volts DC at point (B). Adjust A4 for maximum amplitude at marker.
4.	"	"	"	41.25MC	"	"	A5	Adjust for MINIMUM amplitude at marker.
5.	"	"	"	45.3MC	"	"	A6	Adjust for maximum gain at marker.
6.	"	"	"	44.0MC	"	"	A7	"
7.	"	"	"	41.25MC 42.4MC 42.8MC 44.0MC 44.5MC 45.3MC 45.75MC 47.25MC	"	"		Check for response similar to Fig. 3 with markers as shown. If necessary, retouch A2 thru A7 for desired response. A7 controls the symmetry of the top, A6 controls position of the 45.75MC marker. A4 controls position of the 42.4MC marker (this slug will seldom need retouching. CAUTION: The position of 44.5MC marker is very critical (98%).

4.5MC TRAP ALIGNMENT

Use 0-10 volts AC scale on VTVM.
Set contrast control fully clockwise.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
8.	.005mfd	High side to pin 9 (grid) of 6U8 (V4). Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	RF probe to pin 11 (cathode) of picture tube. Common to chassis.	A8	Adjust for MINIMUM deflection.

SOUND IF ALIGNMENT

Tune in a TV signal and reduce signal level at the antenna terminals by use of an attenuator or similar device until a hiss similar to super regeneration is heard in the sound.
Adjust A9, A10, A11 and A12 for maximum undistorted sound.
Adjust the buzz control (R9) for MINIMUM buzz.

TUNER ALIGNMENT INSTRUCTIONS LOCATED ON PAGE 6.

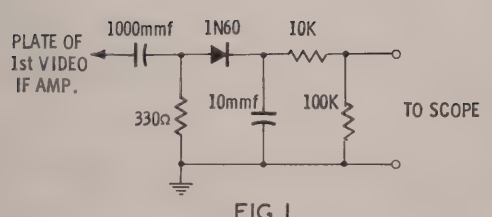


FIG. 1

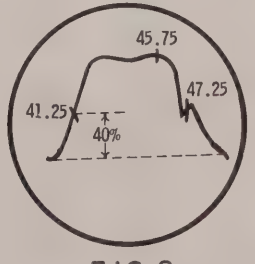


FIG. 2

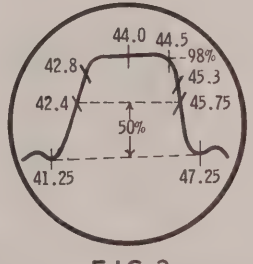


FIG. 3

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	1st. Video IF Amp.	6BZ6	
V2	2nd. Video IF Amp.	6BZ6	
V3	3rd. Video IF Amp.	6CB6	
V4	Video Amp. - 1st. Sound IF Amp.	6U8	
V5	Video Output	12BY7A	
V6	AGC Keying	6AU6	
V7	2nd. Sound IF Amp. - Sync Amp.	6U8	

ITEM No.	USE	TYPE	NOTES
V8	Audio Det.	6BN6	
V9	Audio Output	6AQ5A	
V10	Sync Sep.	6BY6	
V11	Vert. Osc. - Vert. Output	6DE7	
V12	Horiz. AFC-Horiz. Osc.	6CG7	
V13	Horiz. Output	6DQ6A	
V14	Damper	6AX4GT	
V15	HV Rect	1B3GT	
V16	LV Rect	5U4GB	

PICTURE TUBE

ITEM No.	REPLACEMENT DATA: TRUETONE PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	SYLVANIA PART No.	NOTES
V17	21CBP4A		21CBP4-A ①	21CBP4/ 21CBP4A ②	① "Silverama" ② ② "Silver Screen 85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	VOLT.	REPLACEMENT DATA: TRUETONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	480	300	45X428	AFH4-07	BD324 BBR35-50	FP333.8 TC32	TMT-25 TD-10-50	Q-321.2	R2203 *
B	480	300							
C	430	50							
C2A	480	300	45X429	AFH4-53-75	BD354 BR505	FP344.2 TT50X30		T-180 MT-0650	R2204 *
B	480	300							
C	440	50							
C3	4	50	45X418 ①	PR8I50V4	BBR4-50	TC30	TD-4-50	MT-0504	TE-1302.1

① Rating may be 5mfd ② 50V in some versions.
* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	VOLT	REPLACEMENT DATA: TRUETONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C4	47		47X303	SI 47	D5-470	UT5Q47	UC-5447	5GA-Q47	
C5	47		47X303	SI 47	D5-470	UT5Q47	UC-5447	5GA-Q47	
C6	1000	1000	80X1	HVD-15-1000	DD-102	BYA10D1M	DC3021	5GA-D1	
C7	.47	200	RCP10M474M	P388N-47		CUB2P47	GEM-2047	2TM-P47	
C8	.47	200	RCP10M2474M	P288N-47		CUB2P47	GEM-2047	2TM-P47	
C9	680		80X5	BPD-00068	DD-681	BYA10T68	UC-5368	5GA-T68	
C10	56				TCZ-56				NPO 5%
C11	470		80X4	BPD-00047	DD-471	BYA10T47	UC-5347	5GA-T47	
C12	680		80X5	BPD-00068	DD-681	BYA10T68	UC-5368	5GA-T68	
C13	1000	1000	80X1	HVD-15-1000	DD-102	BYA10D1M	DC3021	5GA-D1	
C14	68			NPO-D1 68	DTZ-68	C10Q68C		5TCC-Q68	NPO
C15	680		80X15		D5-681			MS-366	10%
C16	680			BPD-00068	DD-681	BYA10T68	UC-5368	5GA-T68	
C17	470		80X4	BPD-00047	DD-471	BYA10T47	UC-5347	5GA-T47	
C18	1000	1000	80X1	HVD-15-1000	DD-102	BYA10D1M	DC3021	5GA-D1	
C19	100		47X604	SI 100	D5-101	LT5T1	UC-531	5GA-T1	
C20	.047	400	RCP10M4473M	P488N-047	DF-503	CUB5S47	GEM-6147	5TM-S47	
C21	.1	400	RCP10M104M	P488N-1	DF-104	CUB4P1	GEM-601	4TM-P1	
C22	.015	600	RCP10M153M	P688N-015	DD15-153	CUB6S15	GEM-6115	6TM-S15	
C23	.047	600	RCP10M4473M	P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C24	.1	200	RCP10M1034M	P288N-1	DF-104	CUB2P1	GEM-601	2TM-P1	
C25	1000	1400	47X753	DAC-2	DD15-102	HVB15D1	DC3021	BL-D10	
C26	1.5		47X384	NPO-SI 1.5	TCZ-1R5	CTA8V15C	ZT-5515	5TCCB-V15	
C27	1000	1000	80X1	HVD-15-1000	DD-102	BYA10D1M	DC3021	5GA-D1	
C28	5000		47X507	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C29	100		47X604	SI 100	D5-101	LT5T1	UC-531	5GA-T1	
C30A	1000	1000①	80X3	HVD-15-1000	DD-102	BYA10D1M	DC3021	5GA-D1	
B	1000	1000①		HVD-15-1000	DD-102	BYA10D1M	DC3021	5GA-D1	
C31	15		47X872	NPO-DI 15	D5-150	L10Q15		5TCC-Q15	10%
C32A	1000	1000①	80X3	HVD-15-1000	DD-102	BYA10D1M	DC3021	5GA-D1	
B	1000	1000①		HVD-15-1000	DD-102	BYA10D1M	DC3021	5GA-D1	
C33	1000	1000	80X1	HVD-15-1000	DD-102	BYA10D1M	DC3021	5GA-D1	
C34	5000		47X507	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C35	.0047	400	RCP10M4472M	P488N-0047	D5-472	CUB5D47	GEM-6247	5TM-D47	
C36	.0047	600	RCP10M6472M	P688N-0047	D5-472	CUB6D47	GEM-6247	6TM-D47	
C37	.47	200	RCP10M2474M	P288N-47		CUB2P47	GEM-2047	2TM-P47	①
C38	5000		47X507	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	
C39	.047	400	RCP10M4473M	P488N-047	DF-503	CUB4S47	GEM-6147	4TM-S47	
C40	1000	1000	80X1	BPD-001	DD-102	BYA8I1	DC521	5HK-D1	
C41	.047	400	RCP10M4473M	P488N-047	DF-503	CUB4S47	GEM-6147	4TM-S47	
C42	.01	400	RCP10M103M	P488N-01	D5-103	CUB4S1	GEM-611	4TM-S1	
C43	.01	400	RCP10M103M	P488N-01	D5-103	CUB4S1	GEM-611	4TM-S1	
C44	.047	600	RCP10M6473M	P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C45	.047	200	RCP10M2473M	P288N-047	DF-503	CUB2S47	GEM-6147	2TM-S47	
C46	.1	800	RCP10M6104M	P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	
C47	.047	600	RCP10M6473M	P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C48	18		RCM10B180K	1469-00018	D5-180	2SR5Q18		MS-416	10%
C49	84		RCM20B820K	1469-00082	D5-840	2SR5Q82		MS-482	10%
C50	100		RCM20B101K	1469-0001	D5-101	5R5T1	MCB231	MS-31	10%
C51	.047	400	RCP10M473M	P488N-047	DF-503	CUB4S47	GEM-6147	4TM-S47	
C52	.047	200	RCP10M2473M	P288N-047	DF-503	CUB2S47	GEM-6147	2TM-S47	
C53	.022	200	RCP10M2223M	P288N-022	DD-203	CUB2S22	GEM-6122	2TM-S22	
C54	.47	200	RCP10M2474M	P288N-47		CUB2P47	GEM-2047	2TM-P47	
C55	220		RCM20B221K	1469-00022	D5-221	5R5T22		MS-322	10%
C56	.01	400	RCP10M103M	P488N-01	D5-103	CUB4S1	GEM-611	4TM-S1	
C57	820		RCM20B821K	1464-00082		1R5T82		MS-384	10%
C58	170-706		17A271						
C59	1000		80X1	BPD-001	DD-102	BYA8D1	DC521	5HK-D1	
C60	.047	400	RCP10M4473M	P488N-047	DF-503	CUB4S47	GEM-6147	4TM-S47	
C61	.047	400	RCP10M4473M	P488N-047	DF-503	CUB4S47	GEM-6147	4TM-S47	
C62	56	5000	47X755						10%
C63	.22	400	RCP10M4224M	P488N-22		CUB4P23	GEM-4023	4TM-P23	
C64	5000		47X507	BPD-005	DD-502	BYA10D5	DC525	5HK-D5	①

① Not used in some versions.

CONTROLS

ITEM No.	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: TRUETONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	750Ω	½	78X32		RTV-649		UE178	Contrast
B	1meg				Not Req.		Not Req.	Volume-Tap ② 250K
C	Switch				Not Req.		Not Req.	Push-Pull

PARTS LIST AND DESCRIPTIONS

CONTROLS (cont)

ITEM No.	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: TRUETONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R2A	500K	½	40X436	AB-59	A47-500K-S	QI1-133	U50	Brightness
B	Shaft			AK-8	RS-3/16	NQ	D8-37	
R3A	1.5meg	½	40X430	AB-743	A47-1.5meg -S	QI1-136	U155	Range
B	Shaft			AK-8	RS-3/16	NQ	D8-37	
R4A	50K	½	40X427	AB-31	A47-50K-S	QI1-123	U38	Horiz. Hold
B	Shaft			AK-8	RS-3/16	NQ	D8-37	
R5A	1meg	½	40X428	AB-69	A47-1meg-S	QI1-137	U54	Vert. Hold
B	Shaft			AK-8	RS-3/16	NQ	D8-37	
R6A	1500Ω	½	40X399	AE-8	A47-1500-S	QI1-109	PTA151L	Vert. Lin.
B	Shaft			AK-19	RN-3	TQ	Not Req.	
R7A	2.5meg	½	40X396	AB-83	A47-2.5meg -S	QI1-139	PTA251	Height
B	Shaft			AK-19	RN-3	TQ	Not Req.	
R8A	2.5meg	½	40X396	AB-83	A47-2.5meg -S	QI1-139	PTA251	Sync Stab.
B	Shaft			AK-19	RN-3	TQ	Not Req.	
R9	500Ω	2(WW)	40X397		39-500		FL-500	Buzz

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING: OHMS	WATT	TRUETONE PART No.	NOTES
R10	390K		B84394	
R11	4700Ω		B84472	
R12	470Ω		B85471	
R13	47Ω		B83470	
R14	68K		B84683	
R15	1000Ω		B85102	
R16	470Ω		B85471	
R17	47Ω		B83470	
R18	22K		B84223	
R19	470Ω		B85471	
R20	470Ω		B85471	
R21	180Ω		B84181	
R22	3900Ω		B83392	
R23	5600Ω	1	C84562	
R24	1200Ω		B84122	
R25	3600Ω	4	43X331	
R26	1meg		B84105	
R27	82Ω		B84820	
R28	1meg		B84105	
R29	2200Ω		B84222	
R30	22K		B84223	
R31	100K		B85104	
R32	100K		B85104	
R33	47K		B84473	
R34	47K		B84473	
R35	33K		B84333	
R36	68K		B84683	
R37	22K		B84223	
R38	470K		B84474	
R39	560K		B84564	
R40	100K		B84104	
R41	680K		B84684	
R42	33K		B84333	
R43	560Ω		B84561	
R44	100K		B85104	
R45	68K		B84683	
R46	22K		B84223	
R47	680Ω		B84681	
R48	4700Ω		B84472	
R49	330K		B84334	
R50	100K		B84104	
R51	470Ω	1	C85471	

ITEM No.	RATING: OHMS	WATT	TRUETONE PART No.	NOTES
R53	270Ω	1	C84271	
R53	10K		B84103	
R54	2.2meg		B84225	
R55	330K		B84334	
R56	27K	1	C84273	
R57	270K		B84274	
R58	47K		B84473	
R59	47K		B84473	
R60	6800Ω		B84682	
R61	4700Ω		B84472	
R62	470K		B84474	
R63	390K		B84394	
R64	22K		B84223	
R65	6800Ω		B84682	
R66	2.2meg		B84225	
R67	180Ω		B84181	
R68	1000Ω	1	C84102	
R69	10meg		B85106	
R70	560Ω			
R71	560Ω			
R72	220K		B84224	
R73	330K		B84334	
R74	120K		B84124	
R75	3900Ω		B84392	
R76	82K		B84823	
R77	330K		B84334	
R78	680K		B84834	
R79	82K		B84823	
R80	22K		B84223	
R81	10K		B85103	
R82	1meg		B84105	
R83	56K		B84563	
R84	68Ω		B85680	
R85	470K		B84474	
R86	10K	2	D84103	
R87	100Ω	2	D84101	
R88	5600Ω		B84562	
R89	100K	2	D85104	
R90	1200Ω	10	43X396	
R91	470K		B84274	
R92	12K		12X1	

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	REPLACEMENT DATA: TRUETONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V	520VCT @1.66A	5V @2.6A	53X354		P-2830			26R88	R-64BC	
	SEC. 3	SEC. 4	SEC. 5								
	6.3V @9.5A										

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: TRUETONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	Vert. Osc.	54X19-A	B6702	A-3003	V405	A-8125	26A03	A-97X	
	Alt. Vert. Osc.	54X19							
T3	Vert. Output	51X166	Z1900 ⑫④	A-3038 ⑫③	V30T ⑫⑤	VO-100 ⑤	26S73 ③	A-118X ③	
T4A	Yoke-Horiz. (24MH)	9A2403 ④	DF90T	MDF-92	Y90F19/43	DY-16	Y-16	Y-45 & NW21 ⑤	
B	(90°)-Vert. (39MH)		⑤ ③	⑥ ⑥	⑤ ⑥	⑥ ⑥	⑤ ⑤		
M5	Rear Cover & Centering Device	2A435						YC-1	
	Yoke Clamp	30X811						CL-1	
T5	Horiz. Output	53X362C				HO-283 *		D-121 *	
	Alt. Horiz. Output	53X362				HO-283 *		D-121 *	

① Connect as autoformer. ② Use 9 to 1 turns ratio. ③ Drill new mounting hole(s). ④ Includes R70 and R71. ⑤ Connect same as original. ⑥ Use original rear cover, centering device and horizontal damping network, if necessary.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	Ram Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
4				8		4
7				3		3
8				2		2
5				1		1

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	SEC.	REPLACEMENT DATA: TRUETONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T6	4700Ω	3-4Ω	51X76	Z1107	A-2930	AU-501	A-3877	26S51	S-3X	

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: TRUETONE PART No.	QUAM PART No.	NOTES
SP1	8"	PM	3-4Ω	12AS46 ①	8A2E	① Used in console models.
SP2	4"	PM	3-4Ω	12AS47 ①	4A07	② Used in table models.
	2" x 10"	PM	3-4Ω	12AS49 ②		

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: TRUETONE PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	39MC Coil	9A2369			4204		
L2	1st. Video IF	9A2365	17-4534	TV-131	4202	VF-4	
L3	2nd. Video IF	9A2363	17-4536		6211		Includes 47.25MC Trap and C16
L4	3rd. Video IF	9A2414	17-4535		6221		Includes 41.25MC Trap and C14
L5	4th. Video IF	9A2370	17-4514				Includes Assy.
L6	Resonant Choke	9A2375					30 Microhenries
L7	Series Peaking Coil	36A40	19-4073 *	TV-186 *	6171 *	VP-2 *	75 Microhenries, wound on 3300Ω resistor
L8	Shunt Peaking Coil	36A39	19-3250	TV-198	6130	VP-6	270 Microhenries
L9	4.5MC Trap	9A2413					
L10	Shunt Peaking Coil	36A42					30 Microhenries, wound on 1800Ω resistor
L11	Shunt Peaking Coil	36A41	19-3100 ▲	TV-194 ▲	6112 ▲	VP-3 ▲	100 Microhenries, wound on 390Ω resistor
L13	Shunt Peaking Coil	36A43	19-3180 ♦	TV-196 ♦	6130 ♦		150 Microhenries, wound on 3900Ω resistor
L13	1st. Sound IF	9A2383	17-1036	TV-154	1470-A		
L14	2nd. Sound IF	9A2368	17-3495	TV-113	6303	SF-3	Includes Cap.
L15	3rd Sound IF	9A2368	17-3495	TV-113	6303	SF-2	Includes Cap.
L16	Quadrature Coil	9A2367	20-1005	TV-121	1480		Includes Cap.
L17	RF Choke	9A2380	19-1001	BC-562	4604		1.5 Microhenries

* Shunt with 3300Ω resistor. ▲ Shunt with 390Ω resistor. ♦ Shunt with 3900Ω resistor.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES: PRI.	SEC.	REPLACEMENT DATA: TRUETONE PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No.	NOTES
L18	77Ω *		9A2371		TV-165	6211 ▲		26S7	Horiz. Freq. * Tapped ② 53Ω
L19	50Ω		9A2372		6315			26S5 ▲	Horiz. Waveform ▲ Enlarge mounting hole

FILTER CHOKE

ITEM No.	RATINGS: CURRENT (Measured)	DC RES.	INDUCTANCE @ CURRENT 1000 °C.①	REPLACEMENT DATA: TRUETONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L20	.270A	40Ω	1 Hy.	52X95-5	C5037 ①	C-2996 ①		C-2326 ①	26C44 ①	C-24X

① Drill new mounting holes.

COMPONENT COMBINATIONS

ITEM No	USE	DESCRIPTION	TRUETONE PART No	REPLACEMENT DATA	
X1	Sync Coupling	330mmf, 150K	78X13	Sprague	PRC-5
X2	Vert. Integrator	2000mmf, 5000mmf, 5000mmf, 22K, 6200Ω, 8200Ω	78X7	Aerovox	PA-110
				Centralab	PC-104
				Cornell-Dubilier	DBT3M1
				Sprague	V-1

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: TRUETONE PART No. FUSE	TRUETONE PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	N	4/10A 125V S/B	16X163	18X163	333.400 (N 4/10A-125V-S/B)	346009	N 4/10	HN 3/10 to 1/2

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA: TRUETONE PART No.	CBS PART No.	SYLVANIA PART No.	NOTES
M2	1N60*		1N80	1N60	Video Detector (Pigtail) * Some versions may use CK706A in this application.

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
M3	Lamp		#51
M4	Tuner	25A1170	VHF (Standard Coil Part #ND-4018)
M5	Magnet	2A478	Beam Alignment
M6	Centering Device	2A435	Includes Yoke Rear Cover

TRUETONE MODELS 2DC1840B, 41B, 42B, 43B, 44B, 45B, 2DC2840B, 41B, 42B, 43B

FOLDER 3

PARTS LIST AND DESCRIPTIONS (Continued)

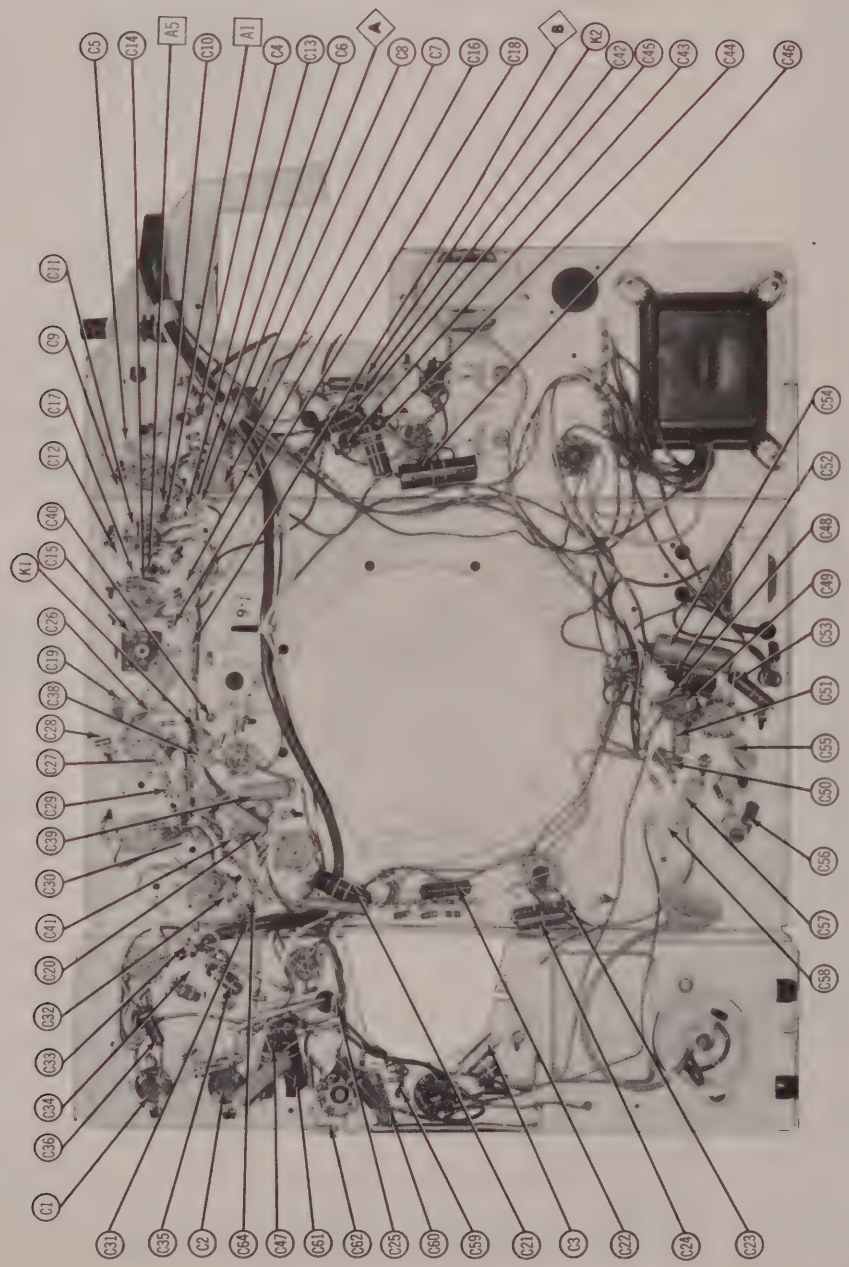
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	17X194-1	
Mask	S-38A382	Table Models
Mask	S-38A375	Console Models
Knob	10A861-1	Secondary Controls
Knob	10A895-1	Fine Tuning
Knob	10A899-1	Channel Selector
Knob	10A896-1	Contrast
Knob	10A897-1	Volume
Knob	10A893-2	UHF Tuning
Knob	10A894-2	UHF Indicator
Dial	26A564	Indicator Assy.
Drive Chain	34X602	Channel Indicator

WIRING DATA

High Voltage Lead	Use BELDEN No.	8869
Shielded Hook-up Wire	Use BELDEN No.	8885 (Single Conductor)
		8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors
		8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No.	8874
300Ω Tuner Input Lead	Use BELDEN No.	8225
300Ω Antenna Lead-in	Use BELDEN No.	8230 or 8275
Antenna Rotor Cable	Use BELDEN No.	8464 (Flat) or 8484 (Round) - 4 Conductor
		8485 (Round) - 5 Conductor
		8488 (Round) - 8 Conductor



CHASSIS BOTTOM VIEW-CAPACITOR & ALIGN. IDENTIFICATION

TUNER PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amp.	6BN4	

ITEM No.	USE	TYPE	NOTES
V202	Mixer Osc.	6CG8	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C201	120		13L8DB121N						7.5%
C202	30		13M320U300NH-05						+7%-3.5%
C203	28		13R-005						10%
C204	12		13R-003						10%
C205	800		13M320EA801Z-04						
C206	5-10		31T-3149-02						
C207	47		13M130U470V						5%
C208	1-4.5		13B-902-07						
C209	800		13M320EA801Z-04						
C210	800		13M320EA801Z-04						
C211	1-4.5		13B-902-07						
C212	47		13R-008						10%
C213	30		13M320U300M-06						
C214	1000		13L8X102Z	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C215	18		13R-032						N220 10%
C216	7.5		13R-033						N150
C217	1000		13M-005	EF-001	MFT-1000			503C-D1	
C218	800		13M320EA801Z-04						

NOTE: Part numbers listed above are "Standard Coil" Part Number.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		PART No.	NOTES
	OHMS	WATT		
R201	4700Ω		12TAE472M	
R202	1000Ω		12TAE102M	
R203	3900Ω		12TAE392K	
R204	220K		12TAE224M	

ITEM No.	RATING		PART No.	NOTES
	OHMS	WATT		
R205	10K		12TAE103M	
R206	1000Ω		12TAE102K	
R207	3900Ω		12TAE392K	
R208	3900Ω		12TAE392K	

NOTE: Part numbers listed above are "Standard Coil" Part Number.

COILS (RF-IF)

ITEM No.	USE	PART No.	NOTES
L201	Ant. Trans.	31T-2107	
L202	IF Trap	34A-748	
L203	IF Trap	31TA-2109	
L204A	Ant., RF, Mixer Grid, Osc. Coils	31M-300-2N4A	Channel 2
B	"	31M-300-3N4A	Channel 3
C	"	31M-300-4N4A	Channel 4
D	"	31M-300-5N4A	Channel 5
E	"	31M-300-6N4A	Channel 6
F	"	31M-300-7N4A	Channel 7
G	"	31M-300-8N4A	Channel 8
H	"	31M-300-9N4A	Channel 9

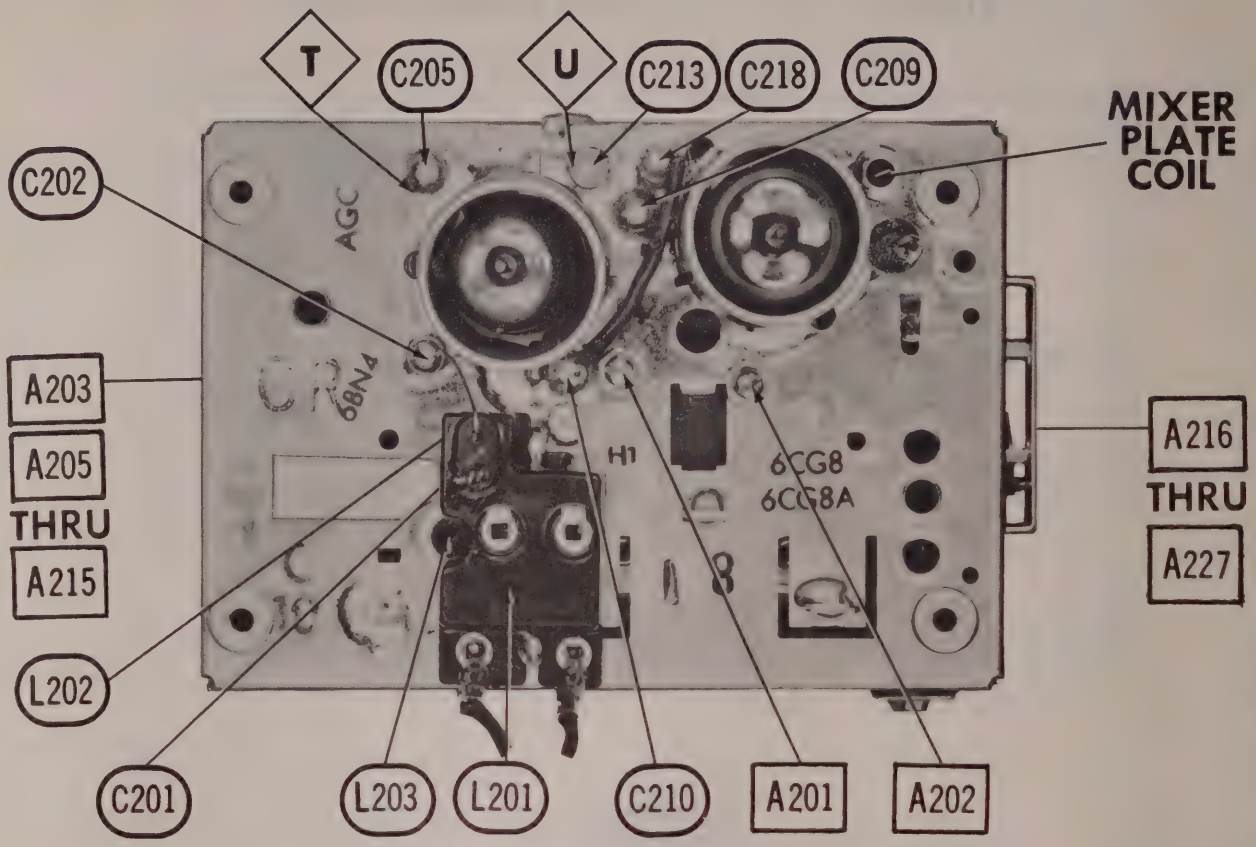
ITEM No.	USE	PART No.	NOTES
L204I	Ant., RF, Mixer Grid, Osc. Coils	31M-300-104A	Channel 10
J	"	31M-300-114A	Channel 11
K	"	31M-300-124A	Channel 12
L	"	31M-300-134A	Channel 13
L205	RF Choke	25A-176-01	
L206	Fine Tuning Coil	34A-787	
L207	Fil. Choke	31K-137-022	
L208	Mixer Plate Coil	31U-610-01	

NOTE: Part numbers listed above are "Standard Coil" Part Numbers.

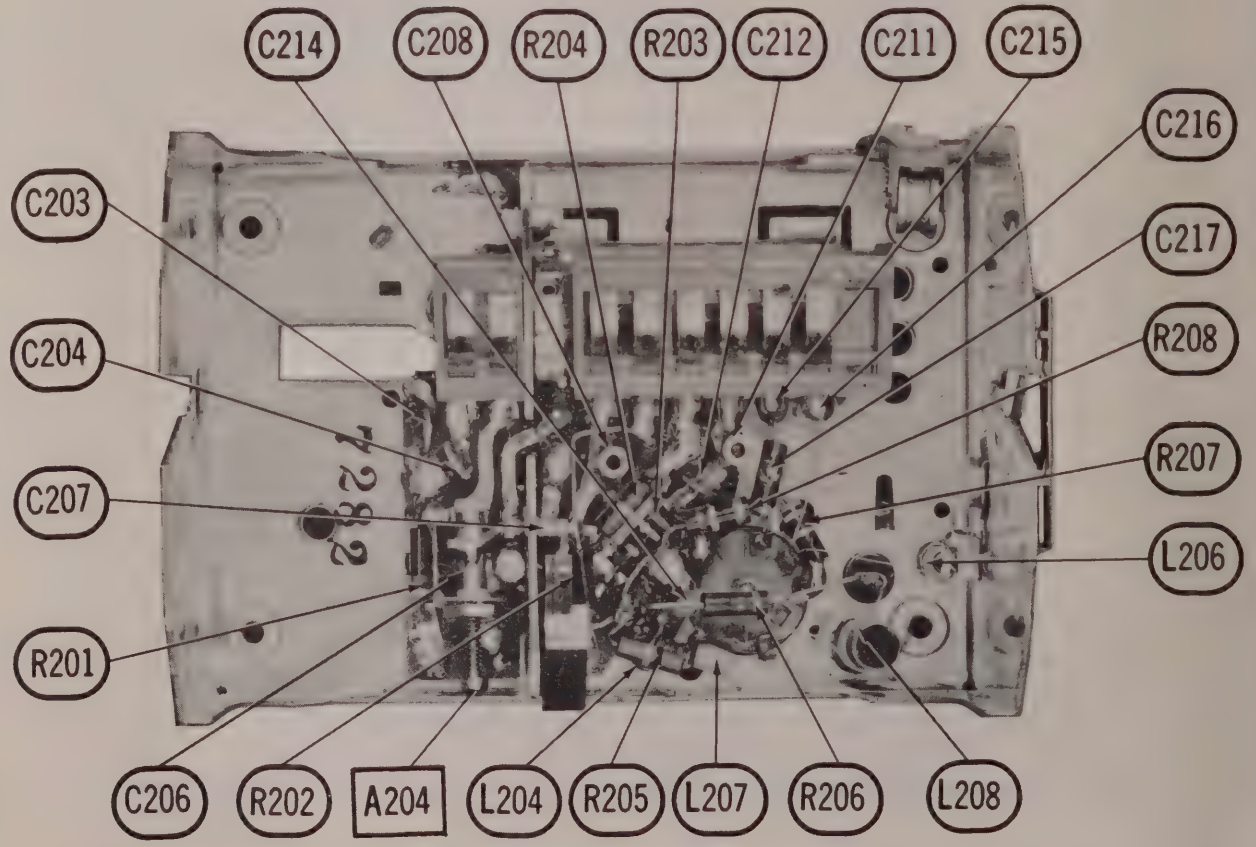
MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
	Drum	31T-2073-171-108	Includes shaft
	Spring	23A158	Drum Retainer
	Spring	31T-3111-02	Detent
	Slug	20F-115	Fine Tuning
	Slug	15A-275	Osc. Tuning

NOTE: Part numbers listed above are "Standard Coil" part numbers.



RF TUNER TOP VIEW

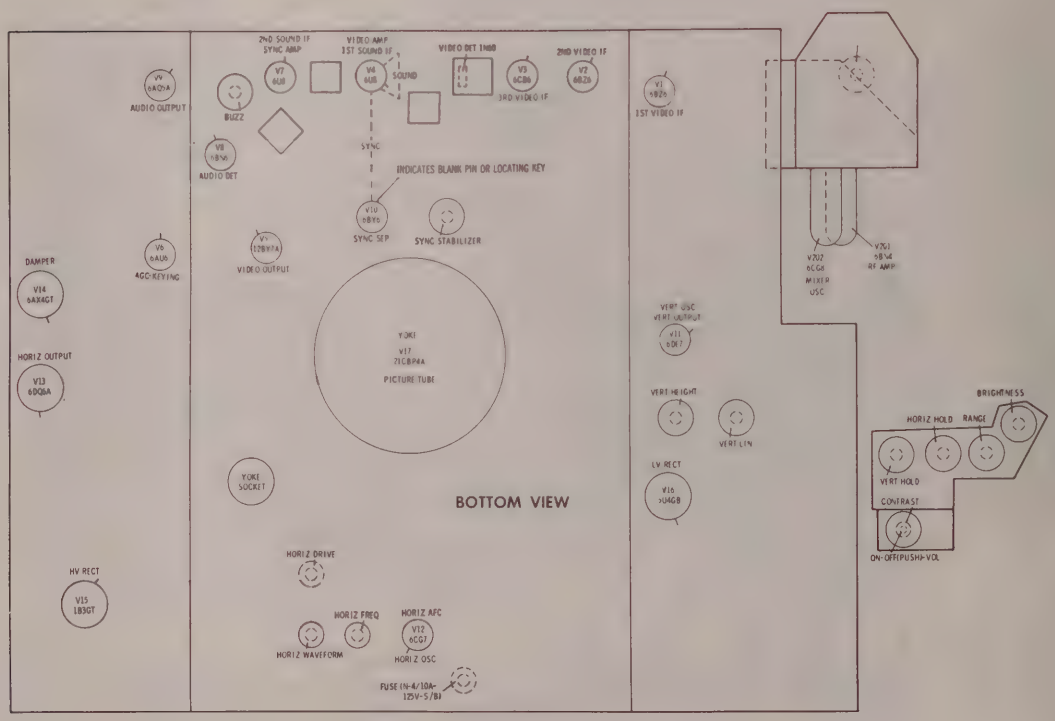


RF TUNER BOTTOM VIEW

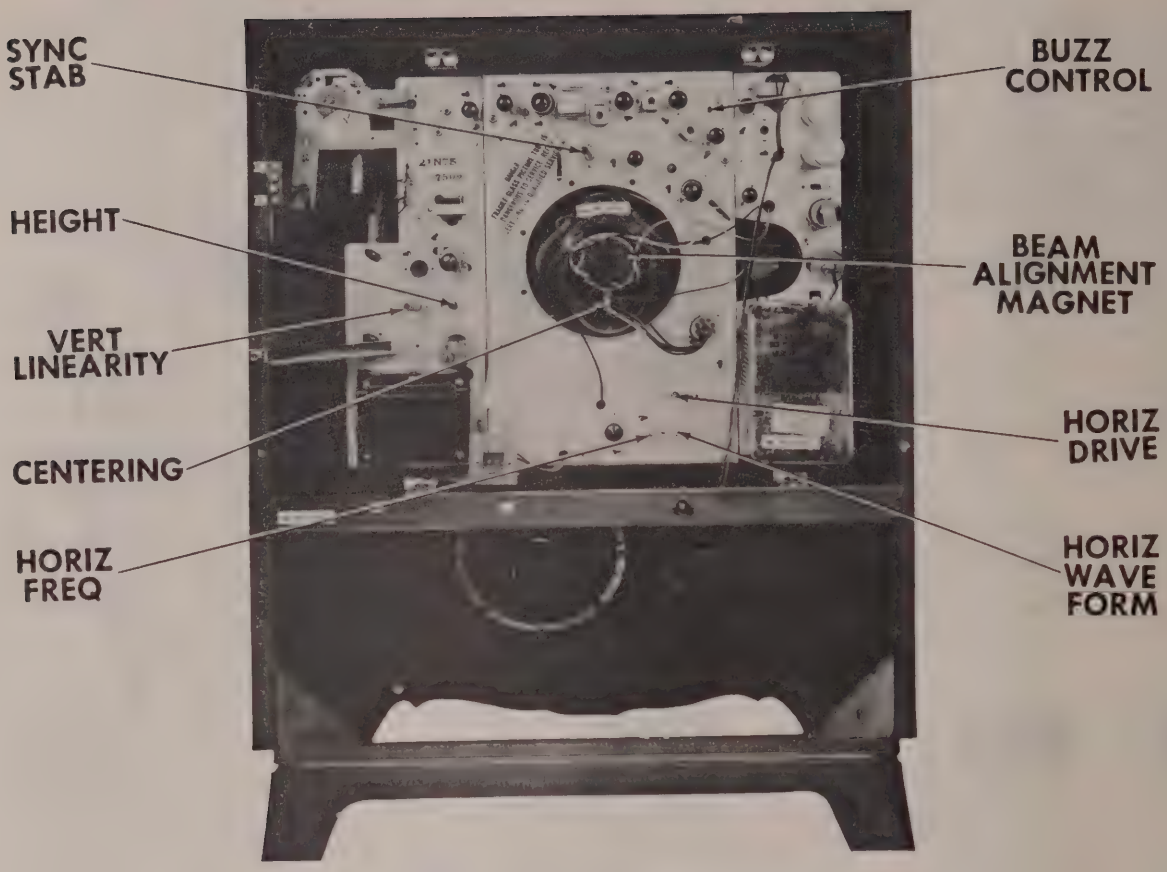
RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	500K	47Ω	.1Ω	0Ω	†2100Ω	†2100Ω	0Ω		
V2	6BZ6	490K	47Ω	.1Ω	0Ω	†2100Ω	†2100Ω	0Ω		
V3	6CB6	.1Ω	180Ω	0Ω	.1Ω	†2100Ω	†2100Ω	0Ω		
V4	6U8	†8000Ω	2.1Ω	†34K	.1Ω	0Ω	†34K	560Ω	1.5Ω	3900Ω
V5	12BY7A	• 200Ω	1meg	0Ω	0Ω	0Ω	.1Ω	†3600Ω	†1200Ω	0Ω
V6	6AU6	†40K	†1200Ω	0Ω	.1Ω	80K	†0Ω	†1200Ω		
V7	6U8	†13K	100K	†150K	0Ω	.1Ω	†83K	0Ω	0Ω	47K
V8	6BN6	• 370Ω	3.6Ω	0Ω	.1Ω	†5900Ω	6Ω	†330K		
V9	6AQ5A	0Ω	270Ω	0Ω	.1Ω	†970Ω	†470Ω	0Ω		
V10	6BY6	• 650K	0Ω	0Ω	.1Ω	†820K	†28K	2.2meg		
V11	6DE7	†370Ω	2.2meg	2.2meg	0Ω	.1Ω	•‡1.7meg	•950K	150Ω	•1600Ω
V12	6CG7	†56K	410K	0Ω	0Ω	.1Ω	•†25K	1.5meg	410K	0Ω
V13	6DQ6A	TP	.1Ω	NC	†10K	470K	TP	0Ω	100Ω	TOP CAP ‡10Ω
V14	6AX4GT	TP	NC	¶1meg	NC	†.1Ω	TP	.1Ω	0Ω	
V15	1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP ‡300Ω
V16	5U4GB	NC	¶20K	NC	22Ω	NC	20Ω	NC	¶20K	
V17	21CBP4A	0Ω	1meg	PIN 6 †100K	PIN 10 ‡10meg	PIN 11 •200K	PIN 12 .1Ω			
V201	6BN4	0Ω	520K	0Ω	.1Ω	†2200Ω	0Ω	520K		
V202	6CG8	3900Ω	†5100Ω	0Ω	0Ω	.1Ω	†2100Ω	†11K	0Ω	220K
ITEM	TYPE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC CAPACITOR CONNECTED IN THE ASSOCIATED CIRCUIT.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM 245V SOURCE.
‡ MEASURED FROM PIN 3 OF V14.
NC NO CONNECTION.
TP TIE POINT.



TUBE PLACEMENT CHART



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern. Connect a short jumper across the Horizontal Waveform coil (L19).

Set the Horizontal Hold control fully clockwise. Adjust Horizontal Frequency slug (B1) until the picture synchronizes horizontally. Remove the jumper from L19. Connect the vertical amplifier of the scope thru a low capacity probe to point ⟨C⟩. Low side to chassis. Adjust the Horizontal waveform slug (B2) for a waveform similar to Fig. 4 with the broad and narrow peaks of equal amplitudes. If necessary during the adjustment of B2, keep the picture in sync with the Horizontal Hold control or B1.

Adjust Horizontal Drive trimmer (B3) clockwise as far as possible without the presence of vertical white lines or compression near the center of the raster.

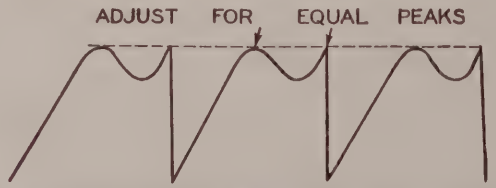


FIG. 4

PHOTOFACT* Folder
*TRADE MARK
EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 13 IN SET 339

Silvertone Chassis 528.50000, 528.50002, 528.50010, 528.50012, 528.50014, 528.50020, 528.50021, 528.50022, 528.50030 were covered in Photofact Folder 13 — Set 339.

Late in production many new models, chassis and late production changes were added.

Following is a list of all models and the chassis used in each.

MODELS	CHASSIS
7100	528.50000, 2
7100A	528.50020, 21, 22, 23, 24, 25, 26, 27, 28
7100AY	528.50020, 21, 22, 23, 24, 25, 26, 27, 28
7100AZ	528.50020, 21, 22, 23, 24, 25, 26, 27, 28
7100Y	528.50000, 2
7100Z	528.50000, 2
7101	528.50010, 12, 14
7101A	528.50030, 34, 35, 36, 37, 38, 39
7101AY	528.50030
7101AZ	528.50030
7101Y	528.50010, 12, 14
7101Z	528.50010, 12, 14
7102	528.50020, 21, 22
7102R	528.50080, 82, 83, 84, 85, 86, 87
7102S	528.50080, 82, 83, 84, 85, 86, 87
7102T	528.50080, 82, 83, 84, 85, 86, 87
7103	528.50030
7103R	528.50030, 33, 34, 35, 36, 37, 38, 39
7103S	528.50030
7103T	528.50030
7110	528.50000, 2
7110A	528.50020, 21, 22, 23, 24, 25, 26, 27, 28
7111	528.50010, 12, 14
7111A	528.50030, 34, 35, 36, 37, 38, 39
7112	528.50000, 2
7112A	528.50020, 21, 22, 23, 24, 25, 26, 27, 28
7113	528.50010, 12, 14
7113A	528.50030, 34, 35, 36, 37, 38, 39
7126	528.50000, 2
7126A	528.50020, 21, 22, 23, 24, 25, 26, 27, 28
7127	528.50010, 12, 14
7127A	528.50030, 33, 34, 35, 36, 37, 38, 39
7164	528.50084, 85, 86, 87
7165	528.50036, 37, 38, 39
7166	528.50084, 85, 86, 87
7167	528.50036, 37, 38, 39

CHASSIS COMPARISON & IDENTIFICATION

Ch. 528.50023

Chassis 528.50023 is the same as Chassis 528.50021 (covered in Photofact Folder 13 — Set 339) except for the following change.

C62 is increased from 27mmf to 120mmf.

Ch. 528.50024

Chassis 528.50024 is the same as Chassis 528.50021 (covered in Photofact Folder 13 — Set 339) except for the following changes.

C62 is increased from 27mmf to 120mmf.

A 1000Ω ½ watt resistor is added between the 4000Ω section of R5A, vertical linearity, and ground. The 1000Ω section of R5A is left disconnected and unused.

Ch. 528.50025

Chassis 528.50025 is the same as Chassis 528.50023, except for the following changes.

C61 is increased from 10000mmf to 20000mmf.

A .047mfd @ 600V capacitor is added from the junction of M1 and M2 to ground.

A .047mfd @ 600V capacitor is added from the junction of C1A and C1B to ground.

A 269 microhenry choke is added between C1A and C2A (Part #10-86-1).

A 1000Ω ½ watt resistor is added between the 4000Ω section of R5A, vertical linearity, and ground. The 1000Ω section of R5A is left disconnected and unused.

SILVERTONE CHASSIS 528.50023, 24, 25, 26, 27, 28, 33, 34, 35, 36, 37, 38, 39, 80, 82, 83, 84, 85, 86, 87

PRODUCTION CHANGE
BULLETIN 212

PRODUCTION CHANGE
BULLETIN 212

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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SET 405 FOLDER 4

Ch. 528. 50026	Chassis 528. 50026 is the same as Chassis 528. 50025, except for the following change. C32 is increased from 1000mmf to 5000mmf.
Ch. 528. 50027, 528. 50028	Chassis 528. 50027 and 528. 50028 are the same as Chassis 528. 50025, except for the following changes. C32 is increased from 1000mmf to 5000mmf. R5A, C, Height-Vertical Linearity, is changed to Part #24-268-1 or 24-269-1. R70 is decreased from 5Ω 5W to 4. 5Ω 10W. In Chassis 528. 50028 only, a circuit breaker (Part #43-1-2) is added between R70 and M1.
Ch. 528. 50033	Chassis 528. 50033 is the same as Chassis 528. 50014 (covered in Photofact Folder 13 — Set 339) except for the following changes. C62 is increased from 27mmf to 100mmf. R48 is decreased from 680Ω to 470Ω.
Ch. 528. 50034	Chassis 528. 50034 is the same as Chassis 528. 50030 (covered in Photofact Folder 13 — Set 339) except for the following changes. A 4. 7meg ½ watt resistor is added between C8 and the junction of R14 and C25. A 10meg ½ watt resistor and a . 02mfd @ 500V capacitor (wired in parallel) are added from C8 to ground.
Ch. 528. 50035	Chassis 528. 50035 is the same as Chassis 528. 50034 except for the following change. A 1000Ω ½ watt resistor is added between the 4000Ω section of R5A, vertical linearity, and ground. The 1000Ω section of R5A is left disconnected and unused.
Ch. 528. 50036	Chassis 528. 50036 is the same as Chassis 528. 50034 except for the following changes. C61 is increased from 10000mmf to 20000mmf. A . 047mfd @ 600V capacitor is added from the junction of M1 and M2 to ground. A . 047mfd @ 600V capacitor is added from the junction of C1A and C1B to ground. A 269 microhenry choke is added between C1A and C2A (Part #10-86-1). A 1000Ω ½ watt resistor is added between the 4000Ω section of R5A, vertical linearity, and ground. The 1000Ω section of R5A is left disconnected and unused.
Ch. 528. 50037	Chassis 528. 50037 is the same as Chassis 528. 50036 except for the following change. C32 is increased from 1000mmf to 5000mmf.
Ch. 528. 50038, 528. 50039	Chassis 528. 50038 and 528. 50039 are the same as Chassis 528. 50036 except for the following changes. C32 is increased from 1000mmf to 5000mmf. R5A, C, Height-Vertical Linearity, is changed to Part #24-268-1 or 24-269-1. R70 is decreased from 5Ω 5W to 4. 5Ω 10W. In Chassis 528. 50039 only, a circuit breaker (Part #43-1-2) is added between R70 and M1.
Ch. 528. 50080	Chassis 528. 50080 is the same as Chassis 528. 50000 (covered in Photofact Folder 13 — Set 339) except for the following changes. VHF Tuner 95-114 is used in Chassis 528. 50080. A schematic showing the new tuner is given in this bulletin. R26 is increased from 1000Ω to 22K. C27 is increased from 560mmf to 620mmf. C48 is increased from 5000mmf to 6800mmf. R48 is decreased from 680Ω to 470Ω. R61 is increased from 6800Ω to 8200Ω. R62 is decreased from 33Ω to 12Ω. C62 is increased from 27mmf to 120mmf.
Ch. 528. 50082	Chassis 528. 50082 is the same as Chassis 528. 50080 except for the following changes. A 4. 7meg ½ watt resistor is added from C8 to the junction of R14 and C25. A 10meg ½ watt resistor and a . 02mfd @ 500V capacitor (wired in parallel) are added from C8 to ground.

Ch. 528. 50083	Chassis 528. 50083 is the same as Chassis 528. 50082 except for the following change. A 1000Ω ½ watt resistor is added between the 4000Ω section of R5A, vertical linearity, and ground. The 1000Ω section of R5A is left disconnected and unused.
Ch. 528. 50084	Chassis 528. 50084 is the same as Chassis 528. 50082 except for the following changes. C61 is increased from 10000mmf to 20000mmf. A .047mfd @ 600V capacitor is added from the junction of M1 and M2 to ground. A .047mfd @ 600V capacitor is added from the junction of C1A and C1B to ground. A 269 microhenry choke is added between C1A and C2A (Part #10-86-1). A 1000Ω ½ watt resistor is added between the 4000Ω section of R5A, vertical linearity, and ground. The 1000Ω section of R5A is left disconnected and unused.
Ch. 528. 50085	Chassis 528. 50085 is the same as Chassis 528. 50084 except for the following change. C32 is increased from 1000mmf to 5000mmf.
Ch. 528. 50086, 528. 50087	Chassis 528. 50086 and 528. 50087 are the same as Chassis 528. 50084 except for the following changes. C32 is increased from 1000mmf to 5000mmf. R5A, C, Height-Vertical Linearity, is changed to Part #24-268-1 or 24-269-1. R70 is decreased from 5Ω 5W to 4. 5Ω 10W. In Chassis 528. 50087 only, a circuit breaker (Part #43-1-2) is added between R70 and M1.

(Continued on Reverse Side)

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 11 IN SET 359

Philco Model E-1370 was covered in Photofact Folder 11 — Set 359.

Models F-1406 and F-1408 (Code 124) are electrically identical to the model covered, except for the following changes.

COMPONENT CHANGES

C2 is decreased from .01mfd to 47mmf.

R4, Volume Control, is decreased from 2meg to 500K (Part #33-5575-12).

R9 is increased from 680K to 1meg.

SP1 for Model F-1406 is changed to Part #36-1654.

SP1 for Models F-1408 is changed to Part #36-1655-3 and two are used wired in parallel.

M4, Switch, is changed to Part #42-2079.

L2, Oscillator Coil, is changed to Part #32-4693-7.

L3, Input IF, is changed to Part #32-4583-17.

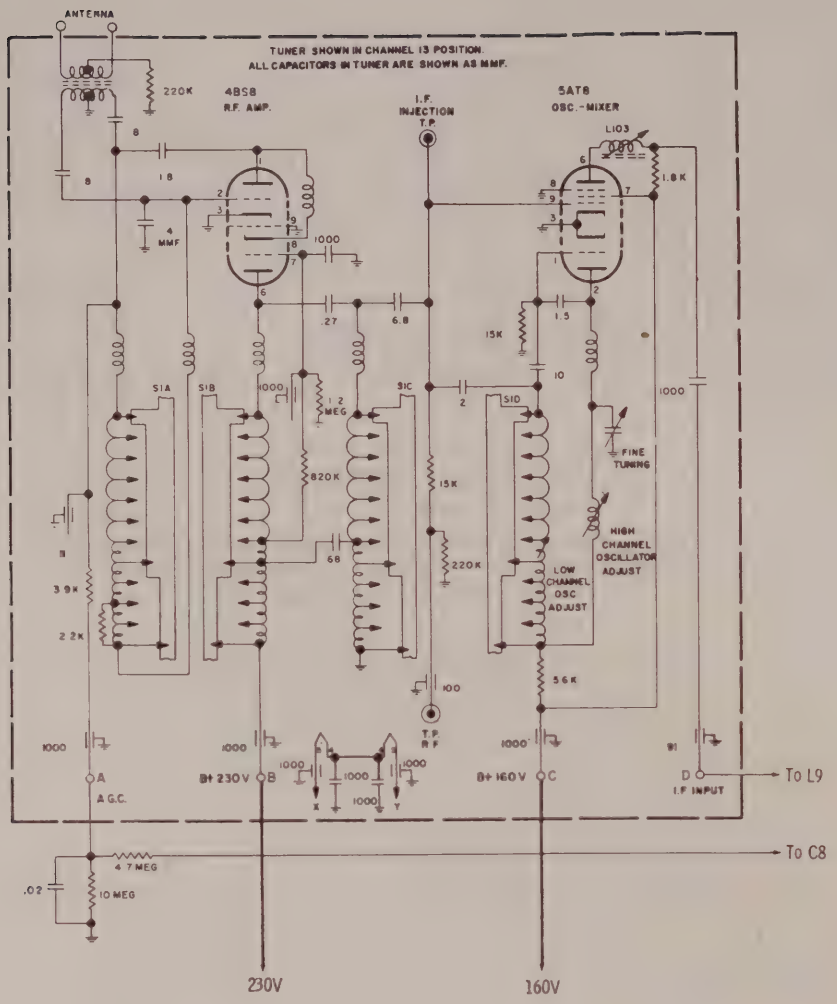
L4, Output IF, is changed to Part #32-4583-17.

T1, Audio Output Transformer, is changed to Part #32-8674.

NEW RECORD CHANGER

Model F-1406 and F-1408 use Philco Record Changer Model M-40. For service information on the 4 speed automatic record changer see Photofact Set 396 — Folder 13.

PHILCO MODELS F-1406, F-1408 (Code 124)


ANTENNA
TUNER SHOWN IN CHANNEL 13 POSITION.
ALL CAPACITORS IN TUNER ARE SHOWN AS MMF.
220K
4BS8
R.F. AMP.
I.F. INJECTION T.P.
5AT8
OSC.-MIXER
L103
1.8K
1000
.27
6.8
15K
1.5
10
2
1000
S1A
S1B
S1C
S1D
1.2 MEG
820K
15K
220K
68
FINE TUNING
HIGH CHANNEL OSCILLATOR ADJUST
LOW CHANNEL OSC ADJUST
3.9K
2.2K
56K
100
T.P. R.F.
91
A
A.G.C.
B+ 230V
B
B+ 160V
C
D
I.F. INPUT
To L9
To C8
4.7 MEG
10 MEG
.02
230V
160V

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

COLUMBIA RECORDS MODEL TR-1000

COLUMBIA RECORDS
MODEL TR-1000

COLUMBIA RECORDS
MODEL TR-1000

TRADE NAME	Columbia Records Model TR-1000		
MANUFACTURER	Columbia Records, 799 Seventh Ave., New York 19, N. Y.		
TYPE SET	Battery Operated Portable Transistorized AM Receiver		
POWER SUPPLY	9 Volts DC	RATING	10.4MA @ 9 Volts DC (No signal, min. volume)
TUNING RANGE—BROADCAST	540 - 1600KC		13MA @ 9 Volts DC (Signal, normal volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.		Loop	455KC (400~ Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.		"	1500KC	Tune to 1500KC signal	"	A4, A5	"
3.		"	600KC	Tune to 600KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Repeat steps 2 and 3.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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H471

SET 405 FOLDER 5

PARTS LIST AND DESCRIPTIONS

COLUMBIA RECORDS
MODEL TR-1000

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N411	Converter		2N411	2N486		Note 1
X2	2N409	1st IF Amplifier		2N409	2N483		Note 2
X3	2N409	2nd IF Amplifier		2N409	2N483		Note 2
X4	2N405	AF Amplifier		2N405	CK872		Note 3
X5	2N407	Output		2N407	CK878		Note 3
X6	2N407	Output		2N407	CK878		Note 3

Note 1. Alternate type GT761 Note 2. Alternate type GT760 Note 3. Alternate type GT20

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	Columbia Records PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	100	15	11A720	SRE15V100	BBR100-15	TT15X100	TD-100-15		TE-1162
C2	3	5	①	XPP-6003	NL3-6	TT6X5	ML4-6		TE-1082
C3	2	50	11A717	PWE50002	NL5-50	TT12X2	ML2-15		TE-1301
C4	3	5	②	XPP-6003	NL3-6	TT6X5	ML4-6		TE-1082

① Some versions may use 10mfd (Part #11A719). ② Some versions may use a 10mfd (Part #11A718).

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	Columbia Records PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C5	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C6	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	①
C7	10000			BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C8	4.7			NPO-SI 4.7	TCZ-4R7	CTA6V47C	ZT-5547	5TCCB-V47	
C9A	10000			BPD-2X01	DD-103	BYD6DS1	DC511	5HK-2S1	
B	10000				DD-103		DC511		
C10	4.7			NPO-SI 4.7	TCZ-4R7		ZT-5547	5TCCB-V47	
C11A	10000			BPD-2X01	DD-103	BYD6DS1	DC511	5HK-2S1	
B	10000				DD-103		DC511		
C12	20000			BPD-02	DD-203	BYB6S2		5HK-S2	
C13	2000			BPD-002	DD-202	BYA10D2	DC522	5HK-D2	
C14	.05	200		P288N-05	DF-503	CUB2S5	GEM-415	2TM-S5	

① Some versions may use 20000mmf in this application.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Columbia Records PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	5000Ω	1/4	9A557					Volume & Switch

RESISTORS

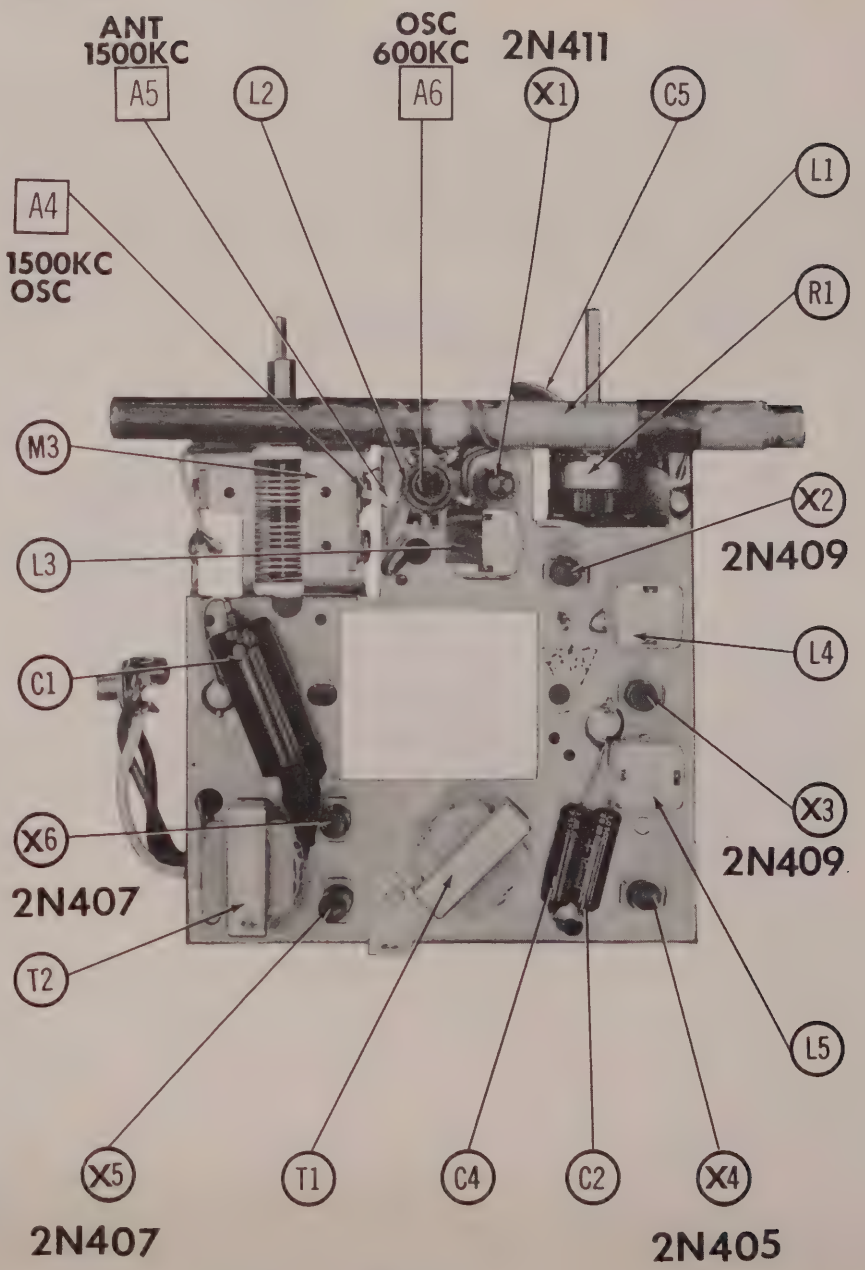
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		Columbia Records PART No.	NOTES
	OHMS	WATT		
R2	33K 5%			
R3	18K			
R4	47Ω			①
R5	3900Ω			
R6	2200Ω 5%			
R7	4700Ω			
R8	330Ω			
R9	47K			
R10	22K			②
R11	2200Ω 5%			

ITEM No.	RATING		Columbia Records PART No.	NOTES
	OHMS	WATT		
R12	2200Ω 5%			
R13	100K 5%			
R14	3300Ω			
R15	6800Ω			
R16	33K 5%			
R17	1200Ω			③
R18	4700Ω			
R19	100Ω			
R20	12Ω			
R21	39K			

① Some versions may use 18Ω in this application.
② Some versions may use 33K in this applicaton.
③ Some versions may use 1000Ω in this application.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	Columbia Records PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2.5	: 1	20A308						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	Columbia Records PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	840ΩCT	3-4Ω	3A216							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Columbia Records PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	1A117		

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		Columbia Records PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loop Stick	19A560					
L2	Osc. Coil	20A309	14-9014	BC-403	2022		
L3	1st IF	20A306	16-9003		9-C1		
L4	2nd IF	20A306	16-9003		9-C1		
L5	3rd IF	20A307	16-9004		9-C2		

BATTERIES

ITEM No.	VOLTAGE	Columbia Records PART No.	REPLACEMENT DATA								NOTES
			BURGESS		EVEREADY		MALLORY		RAY-O-VAC		
			"A"	"B"	"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V			Z		AA		2M9		7-R	6 used.

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		Columbia Records PART No.	CBS PART No.	SYLVANIA PART No.	
M2	1N60	20A310	1N60	1N295	Detector, Pigtail Leads

MISCELLANEOUS

ITEM No.	PART NAME	Columbia Records PART No.	NOTES
M3	Tuning Cap.	14A103	2 Gang (Ant. 22-220mmf, Osc. 24-120mmf)

CABINETS & CABINET PARTS

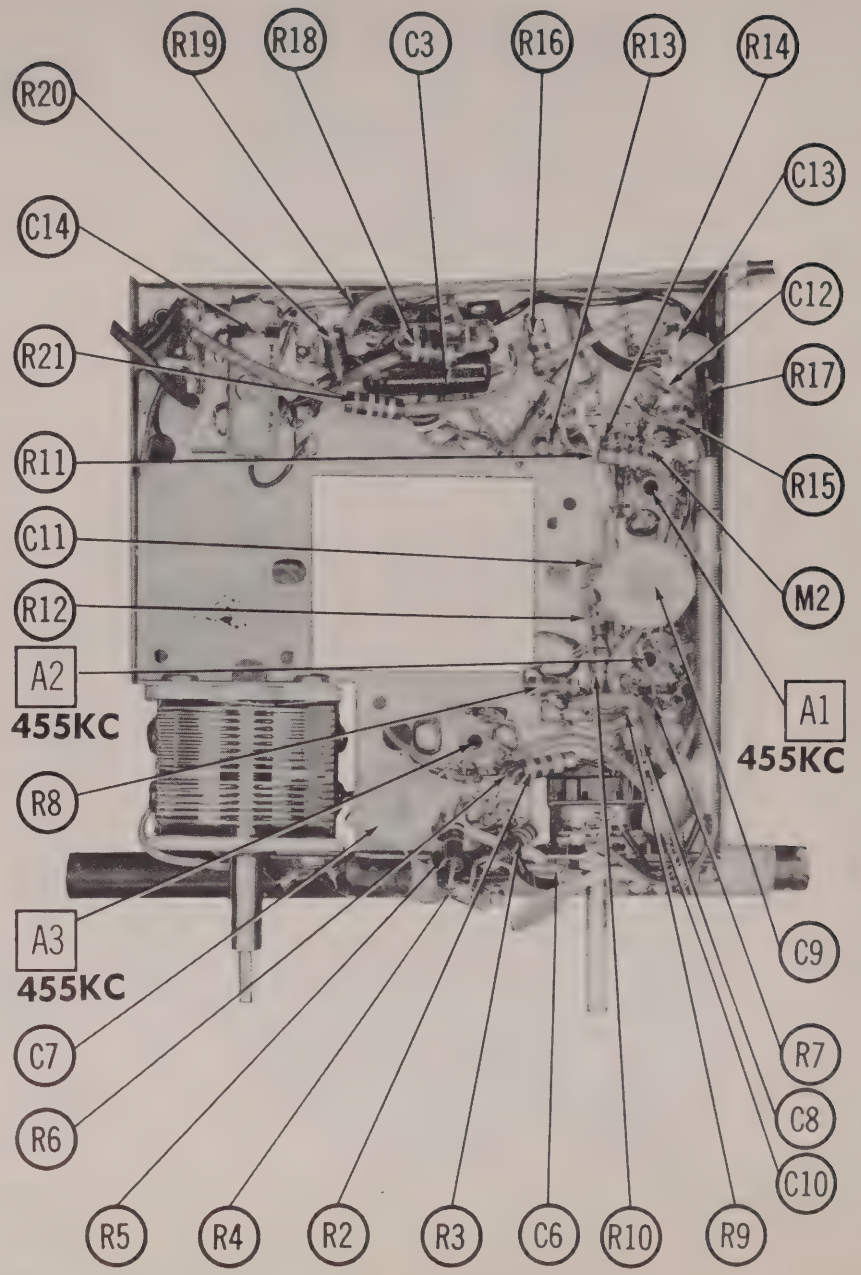
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

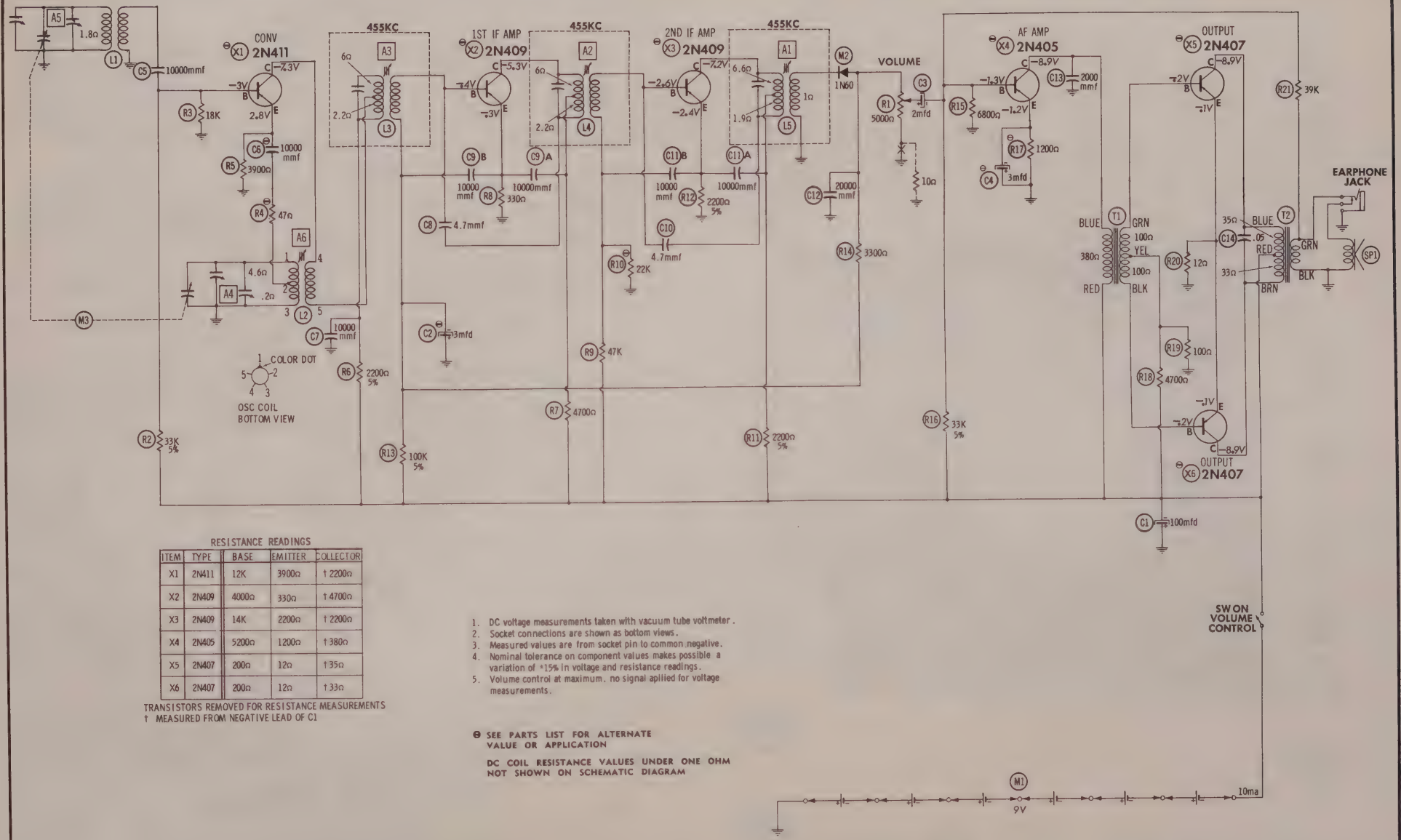
NAME	PART NO.	DESCRIPTION
Knob	8A459	Tuning
Knob	8A460	Volume
Knob	8A461	Calibrated
Cabinet	17A952	Saddletan, With Strap
Cabinet	17A953	Rawhide, With Strap
Cabinet	17A954	Cordovan, With Strap

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—BOTTOM VIEW





RESISTANCE READINGS

ITEM	TYPE	BASE	EMITTER	COLLECTOR
X1	2N411	12K	3900Ω	†2200Ω
X2	2N409	4000Ω	330Ω	†4700Ω
X3	2N409	14K	2200Ω	†2200Ω
X4	2N405	5200Ω	1200Ω	†380Ω
X5	2N407	200Ω	12Ω	†35Ω
X6	2N407	200Ω	12Ω	†33Ω

TRANSISTORS REMOVED FOR RESISTANCE MEASUREMENTS
† MEASURED FROM NEGATIVE LEAD OF C1

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

FISHER
MODEL CA-40

FISHER
MODEL CA-40

FISHER
MODEL CA-40

TRADE NAME	Fisher Model CA-40
MANUFACTURER	Fisher Radio Corp., 21-21 44th Drive, Long Island City 1, N. Y.
TYPE SET	AC Operated 6Channel 25 Watt Audio Amplifier
TUBES (Ten)	Types 12AX7 Preamplifier, 12AU7 Cathode Follower, 12AX7 AF Amplifier, 12AX7 AF Amp. -Phase Inv., (4) 6BQ5/EL84 Output, (2) 6BW4 Rectifier
POWER SUPPLY	105-125 Volts AC-50/60 Cycles RATING 1.1 Amp. @117 Volts AC (120Watts)

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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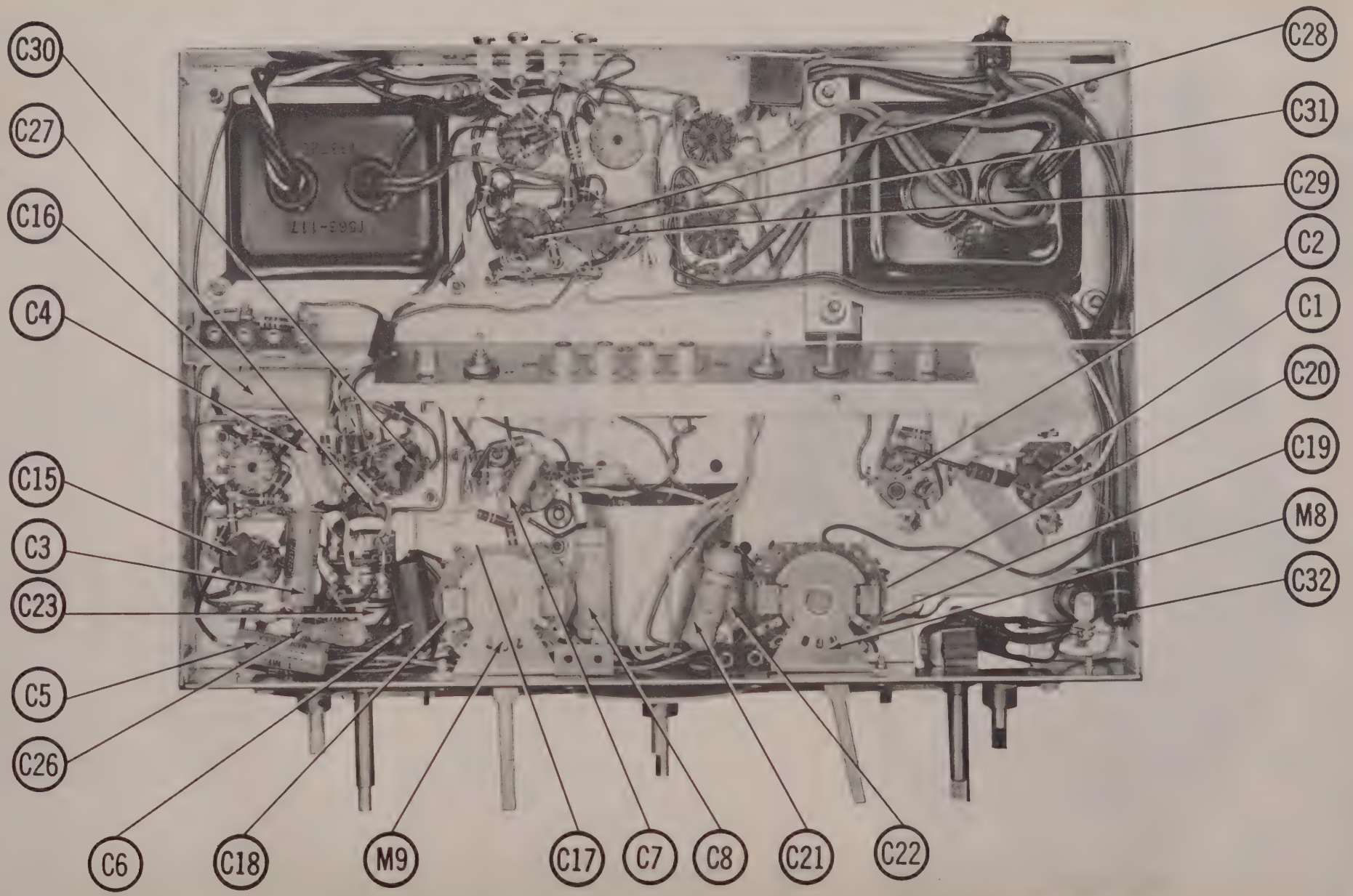
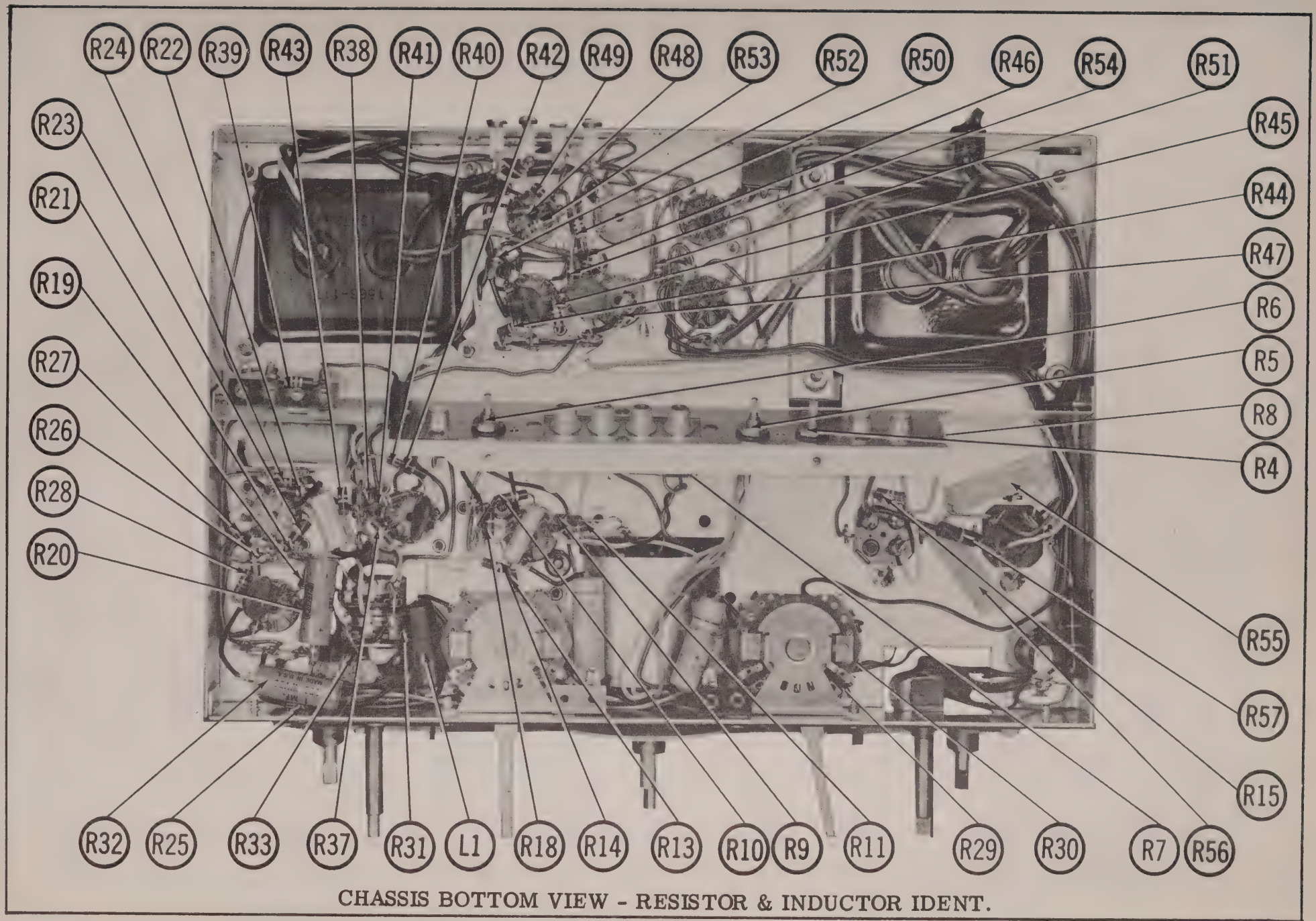
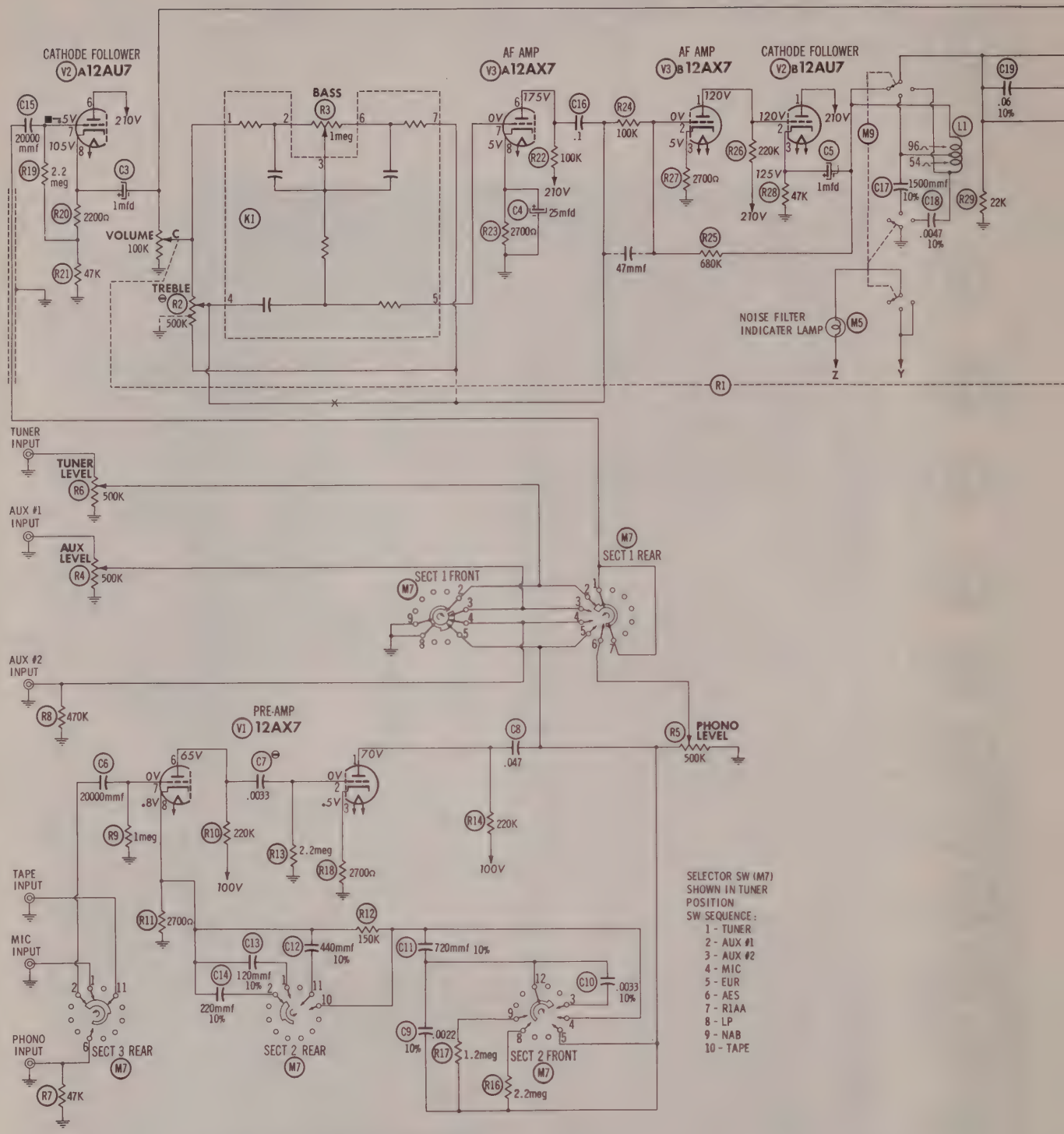


CHASSIS BOTTOM VIEW - CAPACITOR & MISC. IDENT.



CHASSIS BOTTOM VIEW - RESISTOR & INDUCTOR IDENT.



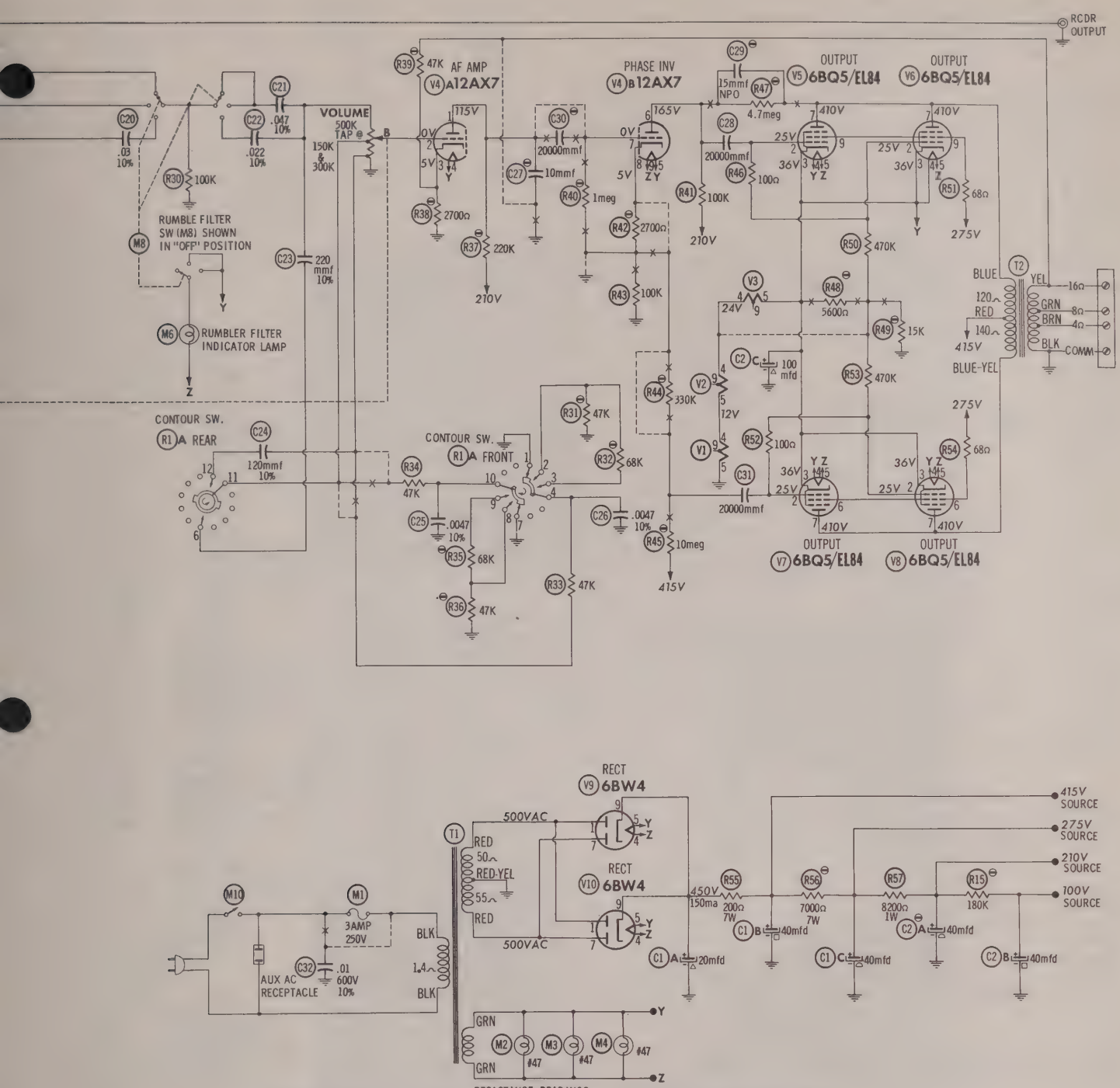
SELECTOR SW (M7) SHOWN IN TUNER POSITION
SW SEQUENCE:
1 - TUNER
2 - AUX #1
3 - AUX #2
4 - MIC
5 - EUR
6 - AES
7 - RIAA
8 - LP
9 - NAB
10 - TAPE

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958



RESISTANCE READINGS

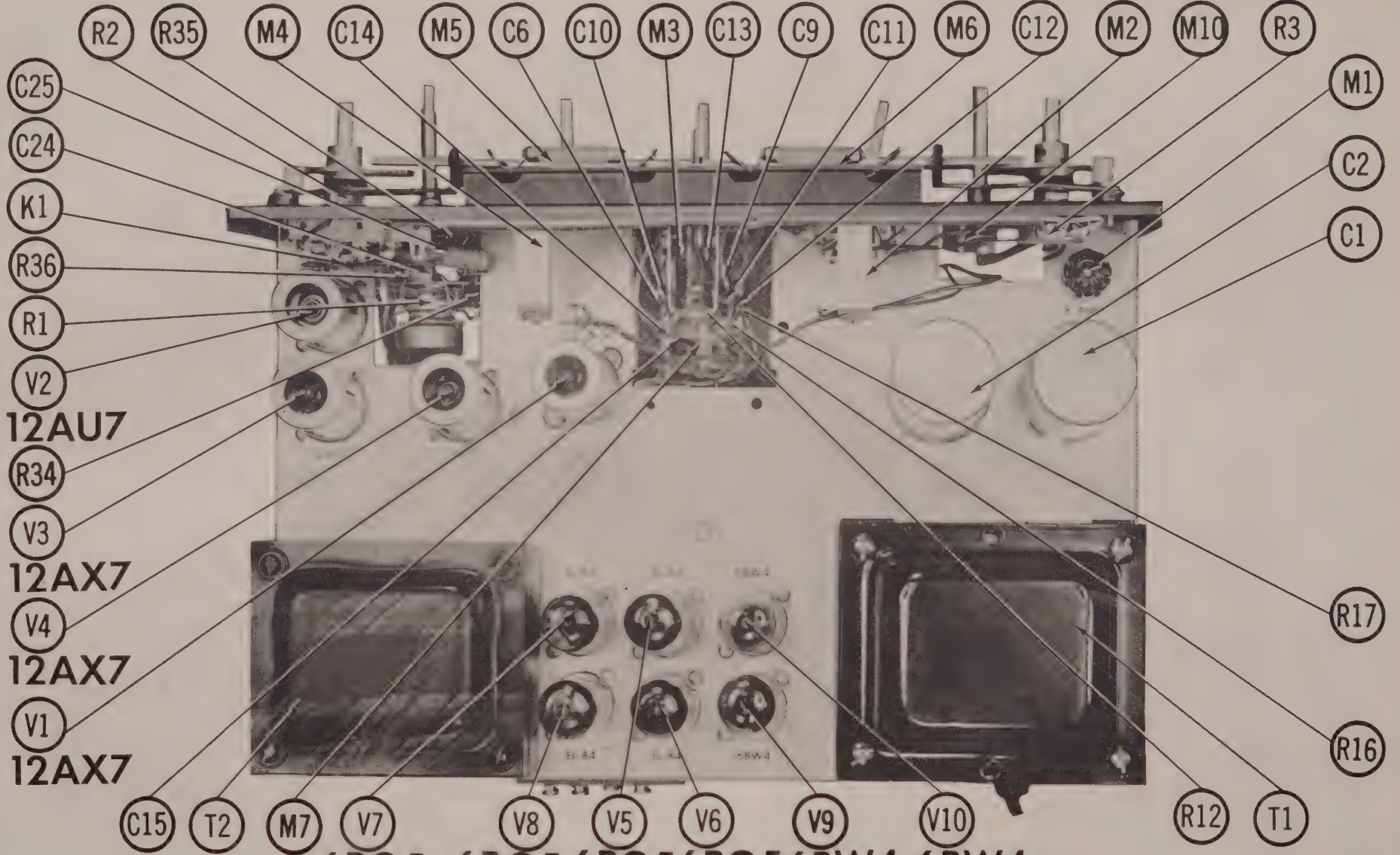
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†370K	2.2meg	2700Ω	17Ω	0Ω	†380K	1meg	2700Ω	NC
V2	12AU7	†16k	†220K	47K	28Ω	16Ω	†16K	2.2meg	50K	NC
V3	12AX7	†300K	250K	2700Ω	28Ω	43Ω	†120K	400K	2700Ω	NC
V4	12AX7	†220K	72Ω	2600Ω	42Ω	42Ω	†110K	†1.4meg	100K	42Ω
V5	6BQ5 EL84	NC	460K	42Ω	42Ω	42Ω	NC	†320Ω	NC	†7200Ω
V6	6BQ5 EL84	NC	460K	42Ω	42Ω	42Ω	NC	†320Ω	NC	†7200Ω
V7	6BQ5 EL84	NC	460K	42Ω	42Ω	42Ω	NC	†215Ω	TP	†7200Ω
V8	6BQ5 EL84	NC	460K	42Ω	42Ω	42Ω	NC	†215Ω	TP	†7200Ω
V9	6BW4	50Ω	NC	NC	42Ω	42Ω	NC	55Ω	NC	20K(MIN)
V10	6BW4	50Ω	NC	NC	42Ω	42Ω	NC	55Ω	NC	20K(MIN)

† MEASURED FROM PIN 9 OF V 10
▪ MEASURED FROM PIN 8 OF V2
NC NO CONNECTION
TP TIE POINT

405-6

FISHER
MODEL CA-40

FOLDER 6



CHASSIS TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE
V1	Preamplifier	12AX7
V2	Cathode Follower	12AU7
V3	AF Amplifier	12AX7
V4	AF Amp. -Phase Inv.	12AX7
V5	Output	6BQ5/ EL84
V6	Output	6BQ5/ EL84
V7	Output	6BQ5/ EL84
V8	Output	6BQ5/ EL84
V9	Rectifier	6BW4
V10	Rectifier	6BW4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA FISHER PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	▲20	450	C-563-127	AFH3-43-50	B0450	FP376.9	TMT-39	D-235	TVL-3786
B	■40	450			BR2045			MT-4520	
C	▲40	450							
C2A	▲40	450	C-563-128A①	AFH3-142-80	B0450	FP238	TMD-54	D-235	TVL-3755
B	■40	450			BR1005	TC3501	TD-100-50	MTH-5010	
C	▲100	50							
C3	1	250	C-546-126	PRS450V1	BR145	TT250X1		MMT-4501	R2605 *
C4	25	6	C-556-137	XPP6025	BBR25-6	TT6X25	ML30-6	MMT-625	TE-1091
C5	1	250	C-546-126	PRS450V1	BR145	TT250X1		MMT-4501	R2605 *

①In some versions C2C is 50mfd (C2 Part # C-563-128)
* Non Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA FISHER PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C6	20000		C-556-122	BPD-02	DD-203	BYB6S2		5HK-S2	
C7	.0033	200	C68P332K2	P288N-0033	D6-332	CUB6D33	GEM-6233	6TM-D33	10%①
C8	.047	400	C68P473M4	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C9	.0022	200	C68P222K2						10%
C10	.0033	200	C68P332K2				GEM-16233		10%
C11	720		CC21GP721K5						10%
C12	440		CC21GP441K5						10%
C13	120		CC21GP121K5		D6-121	L10T12		MS-312	10%
C14	220		CC21GP221K5		D6-221	L10T22		MS-322	10%
C15	20000		C-556-122	BPD-02	DD-203	BYB6S2		5HK-S2	
C16	.1	400	C68P104M4	P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C17	1500		CC26GP152K5			1R5D15	MCB456	MS-215	10%
C18	.0047	200	C68P472K2				GEM-16247		10%
C19	.06	200	C68P603K2						10%
C20	.03	200	C68P303K2						10%
C21	.047	200	C68P473M2	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C22	.022	200	C68P223K2						10%
C23	220		CC21GP221K5		D6-221	L10T22		MS-322	10%
C24	120		CC21GP121K5		D6-121	L10T12		MS-312	10%
C25	.0047	200	C68P472K2				GEM-16247		10%
C26	.0047	200	C68P472K2				GEM-16247		10%
C27	10			SII0	D6-100	LT6Q1	UC-541	5GA-Q1	②
C28	20000			BPD-02	DD-203	BYB6S2		5HK-S2	
C29	15			NP0-SII5	TCZ-15	CTA6Q15C	ZT-5415	5TCC-Q15	NP0③
C30	20000			BPD-02	DD-203	BYB6S2		5HK-S2	③
C31	20000			BPD-02	DD-203	BYB6S2		5HK-S2	10%
C32	.01	600	C-2747				GEM-1611		

①Some versions may use 10000mmf in this application (Part# CK62GP103V6)
②Some versions may use 33mmf in this application (Part # CC21G330M5)
③Not used in some versions.

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA FISHER PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	Switch		RS-563-124					Contour Switch
B	500K	½						Volume, Tap ⓐ 150K & 300K
C	100K	½						Volume
R2A	500K	½	R-563-126	AB-59	A47-500K-S	Q11-133	U50	Treble Note 1.
B	Shaft			AK-9 *	RS-2 *	PQ *	Not Req.	
R3A	1meg	½	R-563-125	AB-69	A47-1meg-S	Q11-137	U54	Bass
B	Shaft			AK-9*	RS-2 *	PQ *	Not Req	
R4	500K	½	R-520-139	JP-504				Aux 1 Level
R5	500K	½	R-520-139	JP-504				Phono Level
R6	500K	½	R-520-139	JP-504				Tuner Level

Note 1 Tap not used.
* File flat as needed to fit knob.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	FISHER PART No.	NOTES
R7	47K		RC20BF473K	
R8	470K		RC20BF474K	
R9	1meg		RC20BF105K	
R10	220K		RC20BF224K	
R11	2700Ω		RC20BF272K	
R12	150K		RC20BF154K	
R13	2.2meg		RC20BF225K	
R14	220K		RC20BF224K	
R15	180K		RC20BF184K	①
R16	2.2meg		RC20BF225K	
R17	1.2meg		RC20BF125K	
R18	2700Ω		RC20BF272K	
R19	2.2meg		RC20BF225K	
R20	2200Ω		RC20BF222K	
R21	47K		RC20BF473K	
R22	100K		RC20BF104K	
R23	2700Ω		RC20BF272K	
R24	100K		RC20BF104K	
R25	680K		RC20BF684K	
R26	220K		RC20BF224K	
R27	2700Ω		RC20BF272K	
R28	47K		RC20BF473K	
R29	22K		RC20BF223K	
R30	100K		RC20BF104K	
R31	47K		RC20BF473K	②
R32	68K		RC20BF683K	③

ITEM No.	RATING OHMS	RATING WATT	FISHER PART No.	NOTES
R33	47K		RC20BF473K	
R34	47K		RC20BF473K	
R35	68K		RC20BF683K	③
R36	47K		RC20BF473K	②
R37	220K		RC20BF224K	④
R38	2700Ω		RC20BF272K	⑤
R39	47K		RC20BF473K	⑥
R40	1meg		RC20BF105K	⑦
R41	100K		RC20BF104K	
R42	2700Ω		RC20BF272K	⑦
R43	100K		RC20BF104K	
R44	330K		RC20BF334K	⑦
R45	10meg		RC20BF106K	⑦
R46	100Ω		RC20BF101K	
R47	4.7meg		RC20BF475K	⑦
R48	5600Ω		RC20BF562K	⑦
R49	15K		RC20BF153K	⑦
R50	470K		RC20BF474K	
R51	68Ω		RC20BF680K	
R52	100Ω		RC20BF101K	
R53	470K		RC20BF474K	
R54	68Ω		RC20BF680K	
R55	200Ω	7	R-539-120	
R56	7000Ω	7		⑧
R57	8200Ω	1	RC30BF822K	

Note 1. Some versions may use 10K in this application (RC20BF103K)
Note 2. Some versions may use 68K in this application (RC20BF683K)
Note 3. Some versions may use 47K in this application (RC20BF473K)
Note 4. Some versions may use 470K in this application (RC20BF474K)
Note 5. Some versions may use 680Ω in this application (RC20BF681K)
Note 6. Some versions may use 15K in this application (RC20BF153K)
Note 7. Not used in some versions.
Note 8. Some versions may use 2200Ω 7W in this application (R-563-146)

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA FISHER PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V	760VCT	6.3V	T-563-116				PM8411		R-18B
	ⓐ1.1A	ⓐ.150A	5.8A							

FISHER
MODEL CA-40

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	FISHER PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	4300Ω CT	16Ω Tap @ 8Ω, 4Ω	T-563-117							

COILS

ITEM No.	USE	REPLACEMENT DATA					
		FISHER PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Tone Choke	L-563-129					1 Henry.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	FISHER PART No.	REPLACEMENT DATA
K1	Tone Compensation		PC-552-105	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			FISHER PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	3A 250V	F-3000		312003. (3A 250V)	342003	AGC3	

MISCELLANEOUS

ITEM No.	PART NAME	FISHER PART No.	NOTES
M2	Pilot Lamp	I-50009-1	#47
M3	Pilot Lamp	I-50009-1	#47
M4	Pilot Lamp	I-50009-1	#47
M5	Indicator Lamp	I-563-145	Filter
M6	Indicator Lamp	I-563-145	Filter
M7	Switch	S-563-121	Selector (Rotary Wafer Type)
M8	Switch	S-563-122	Rumble Filter (Rotary Wafer Type)
M9	Switch	S-563-122	Noise Filter (Rotary Wafer Type)
M10	Switch	S-563-149	Power On-Off (Leaf Type)
	Glass	A-563-138	Tonescope

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	E-50049-1	Bass, Treble, Selector
Knob	E-563-173	Rumble filter noise filter switch
Knob	E-50049-3	Power On-Off
Knob	E-50049-4	Loudness
Knob	E-50049-2	Volume

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting) ..... Use BELDEN No. 8401
Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

GRUNDIG MAJESTIC MODEL 97

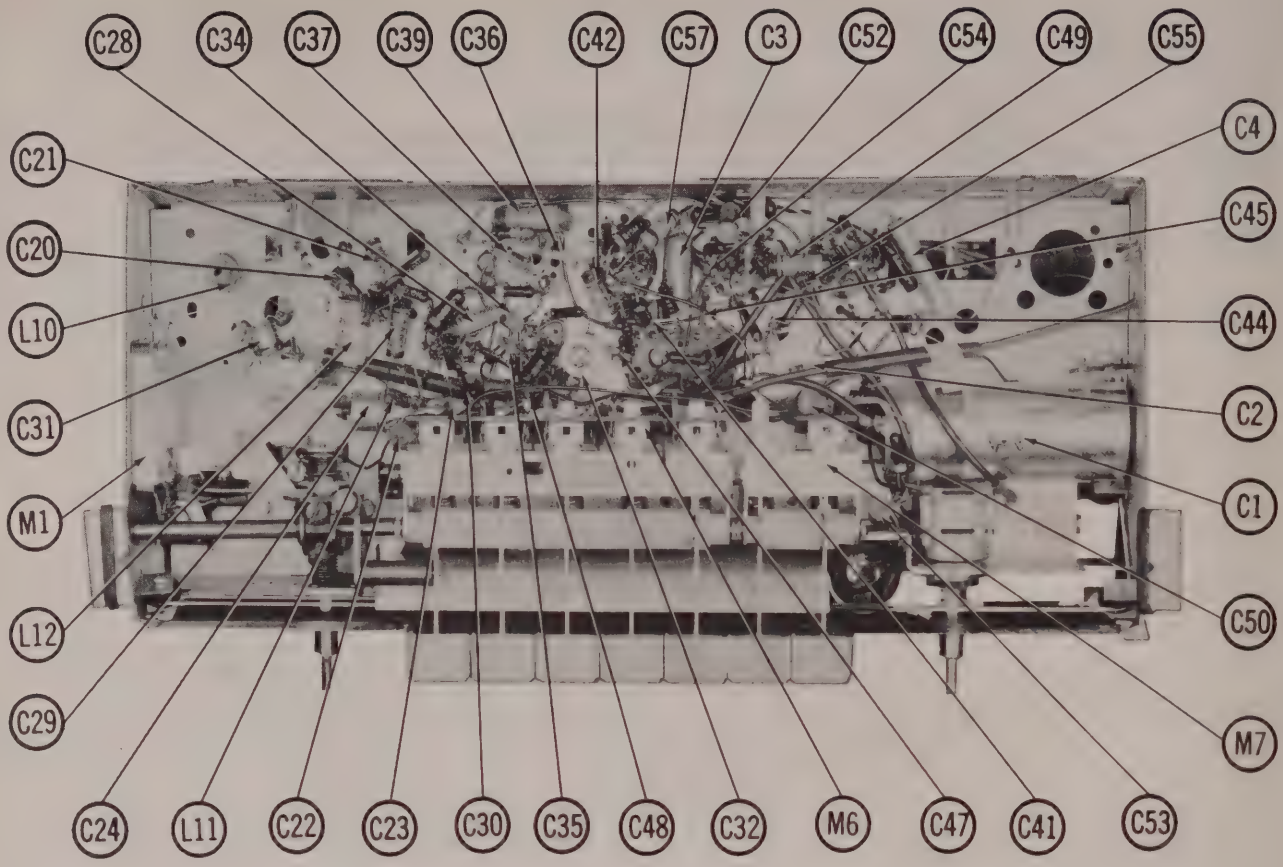
GRUNDIG MAJESTIC
MODEL 97

GRUNDIG MAJESTIC
MODEL 97

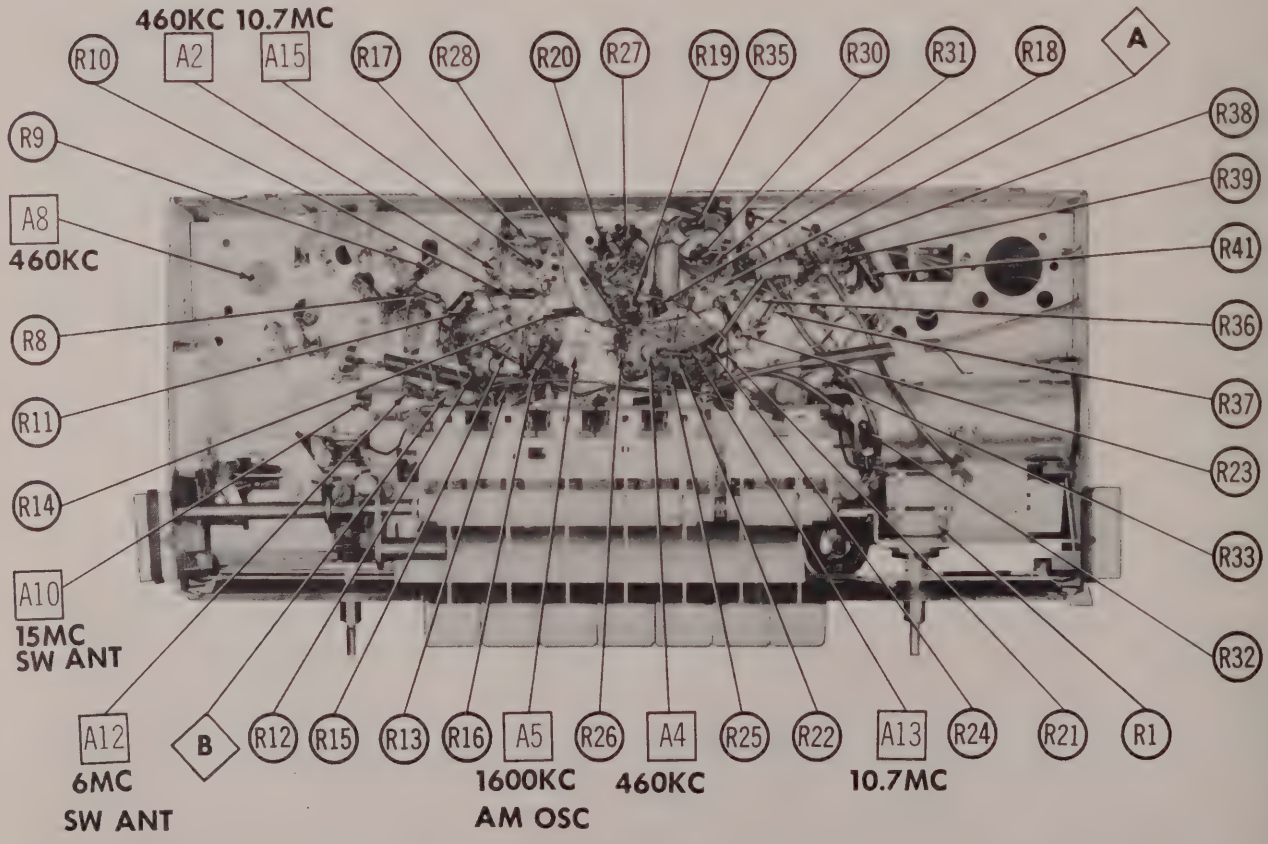
TRADE NAME	Grundig Majestic Model 97	
SUPPLIER	Majestic International Sales Corp., 743 W. La Salle St., Chicago 10, Illinois	
TYPE SET	AC Operated FM-AM Receiver	
TUBES (Six)	Types 6AQ8/ECC85 FM RF Amp.-FM Conv., 6AJ8/ECH81 1st FM IF Amp.-AM Mixer-AM Osc., EF89 2nd FM-1st AM IF Amp., 6T8/EABC80 Ratio Det.-AM Det.-AVC-AF Amp., EM84 Tuning Indicator, 6BQ5/EL84 Output	
POWER SUPPLY	110-120 Volts AC-60 Cycle	RATING .4 Amp@117 Volts AC (38 Watts)
TUNING RANGE—BROADCAST 510-1620KC		FREQ. MOD. 88-108MC SHORT WAVE. 5.9-15MC

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

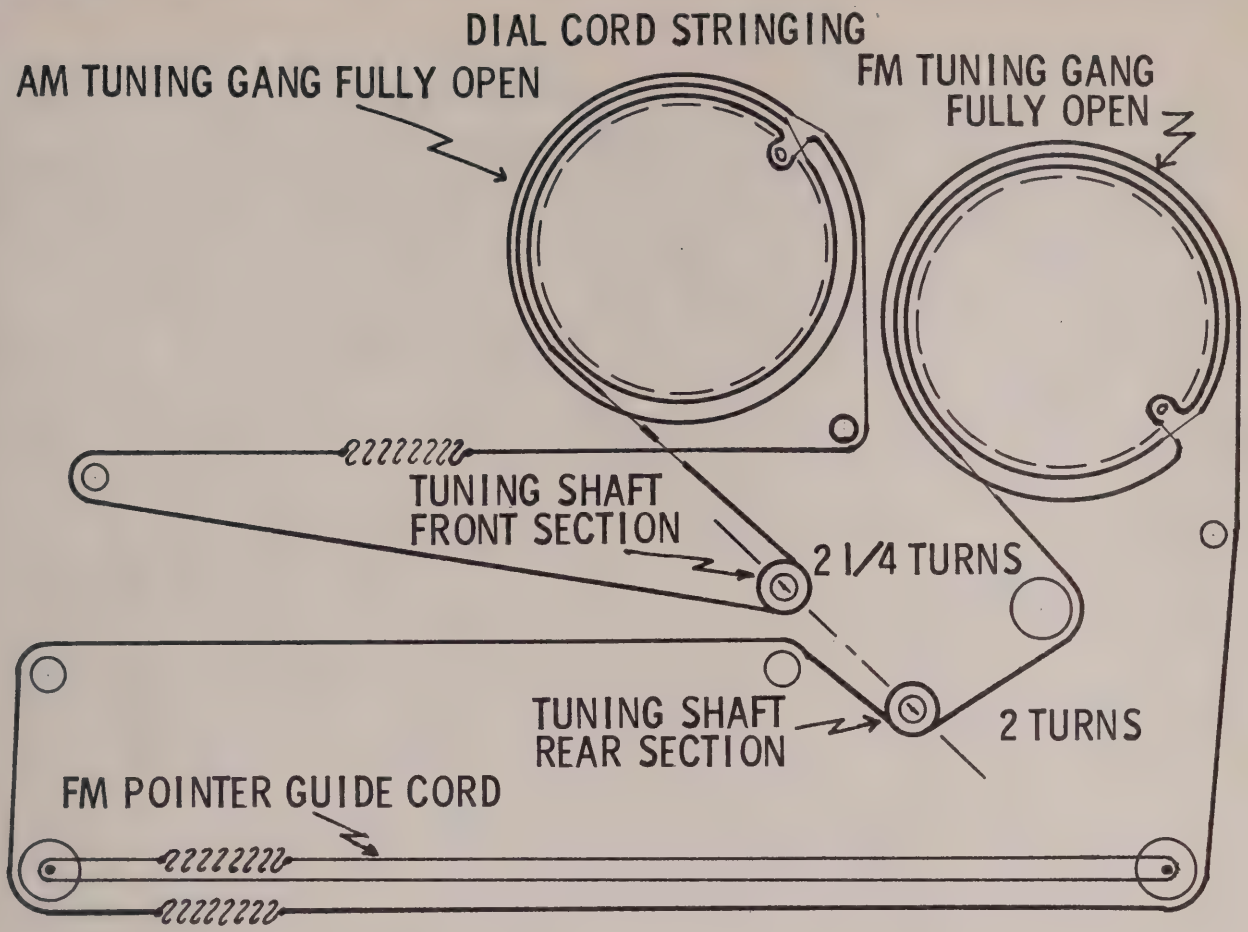
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America

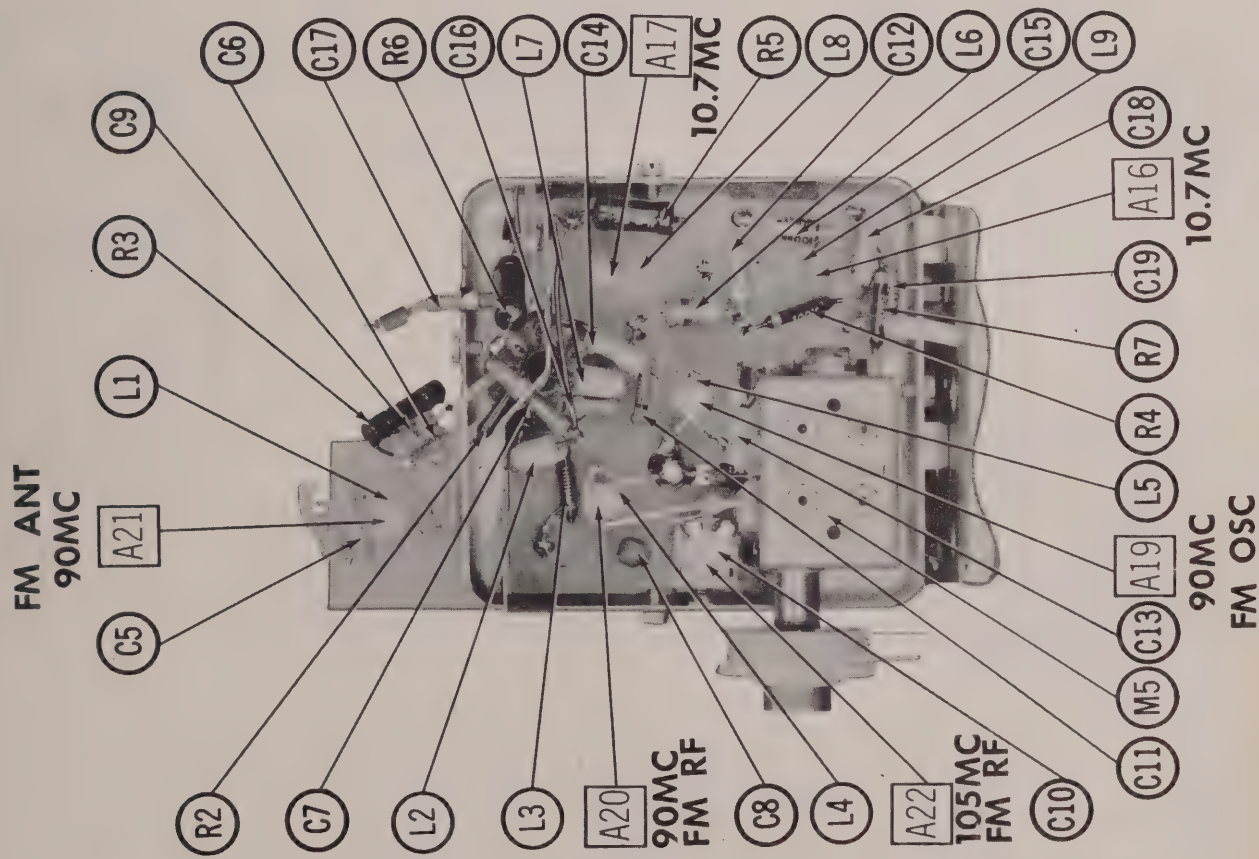


CHASSIS BOTTOM VIEW - CAPACITOR IDENT.



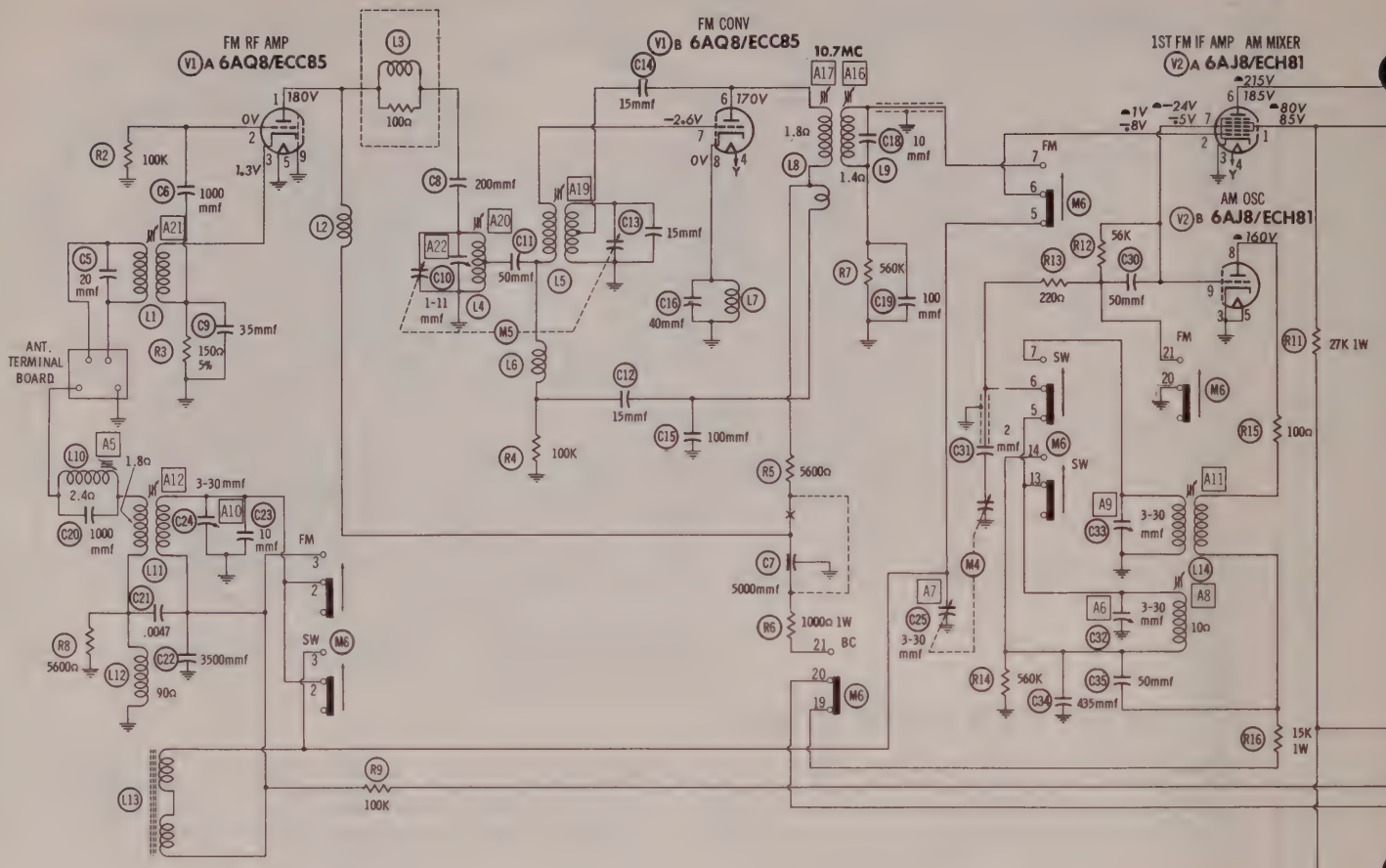
CHASSIS BOTTOM VIEW - RESISTOR & ALIGN. IDENT.





FM RF SUB-CHASSIS

FOLDER 7



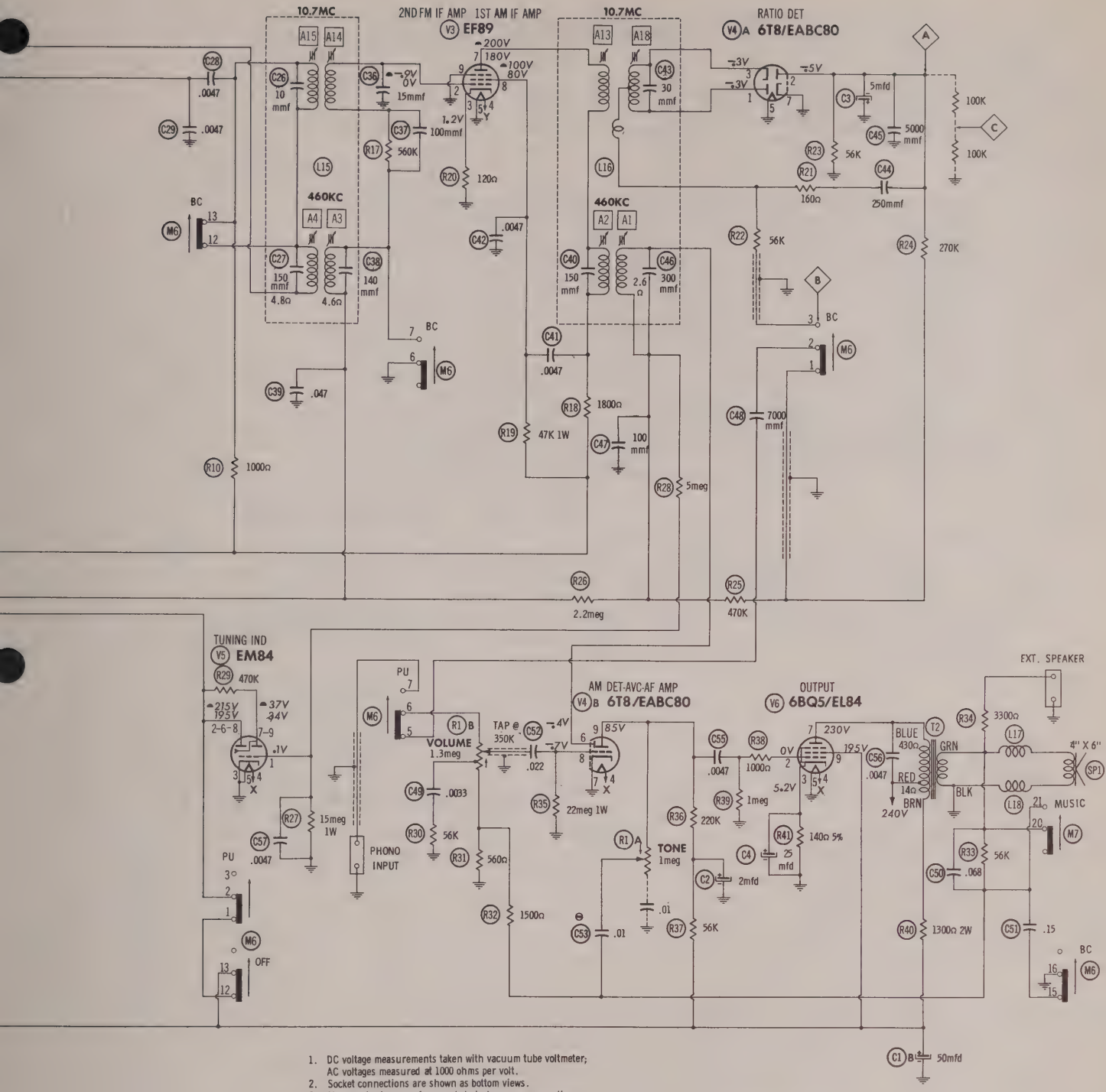
NOTE: PUSHBUTTON KEYBOARD SHOWN IN "BC" POSITION WITH ALL PUSHBUTTONS UP. SOLE PURPOSE OF "BC" PUSHBUTTON IS TO TURN SET ON INITIALLY OR TO MAINTAIN OPERATION WHEN SWITCHING FROM ANY OTHER FUNCTION TO "BC".

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC85 6AQ8	†2300Ω	100K	150Ω	.1Ω	0Ω	†7900Ω	100K	0Ω	0Ω
V2	ECH81 6AJ8	†28K	560K •3meg	0Ω	.1Ω	0Ω	†2300Ω	56K •610K	† • 16K	• 610K
V3	EF89	0Ω	560K • 3meg	120Ω	.1Ω	0Ω	0Ω	†3100Ω	†48K	0Ω
V4	EABC80 6T8	INF	56K	INF	.1Ω	0Ω	700K	0Ω	22meg	†270K
V5	EM84	4meg	†1300Ω	0Ω	0Ω	.1Ω	†1300Ω	†470K	†1300Ω	†470K
V6	EL84 6BQ5	1meg	1meg	140Ω	.1Ω	0Ω	NC	†430Ω	NC	†130Ω

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED
• MEASURED IN "AM" POSITION
† MEASURED FROM OUTPUT OF M1
NC NO CONNECTION

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

405-7

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01mfd.	High side to Ant. stator lug of AM tuning gang.	460KC (400~ Mod.)	BC	Tuning gang fully open.	Across Voice Coil	A1, A2, A3, A4	Adjust for maximum output.
2.		Loop	1600KC	"	1600KC	"	A5, A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	600KC	"	600KC	"	A7	" Repeat Steps 2 and 3.
4.	200mmfd	High side to AM Ant. socket. Low side to chassis.	460KC	"	Tuning gang fully open.	"	A8	Adjust for MINIMUM output.
5.	"	"	15MC	SW	15MC	"	A9, A10	Adjust for maximum output.
6.	"	"	6MC	"	6MC	"	A11, A12	" Repeat Steps 5 and 6.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100K (± 1%) resistors in series from point Ⓐ to chassis. The junction of these two resistors is alignment point Ⓒ as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	200mmfd	High side to pin 7 (grid) of 6AQ8/ECC85 (V1B). Low side to chassis.	10.7MC (Unmod.)	FM	Point of non-interference.	DC probe to point Ⓐ. Common to chassis.	A13, A14 A15, A16 A17	Adjust for maximum deflection.
8.	"	"	"	"	"	DC probe to point Ⓑ. Common to point Ⓒ.	A18	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct sitting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
7.	200mmfd	High side to pin 7 (grid) of 6AQ8/ ECC85 (V1B). Low side to chassis.	10.7MC (450KC. SWP)	FM	Point of non-interference	Vert. Amp. to point Ⓐ. Low side to chassis.	A13, A14 A15, A16 A17	Disconnect stabilizing capacitor C3. Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
8.	"	"	"	"	"	Vert. Amp. to point Ⓑ. Low side to chassis.	A18	Reconnect C3. Adjust so that 10.7MC occurs at center of crossover lines similar to Fig. 2. SLIGHTLY retouch A13, for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
9.	270Ω Carbon Resistor	Across FM Ant. terminals.	90MC	FM	90MC	DC probe to point Ⓐ. Common to chassis.	A19, A20 A21	Adjust for maximum deflection.
10.	"	"	105MC	"	105MC	"	A22	Adjust for maximum deflection.

FIG. 1

FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE
V1	FM RF Amp. -FM Conv.	6AQ8/ ECC85
V2	1st FM IF Amp. -AM Mixer-AM Oscillator	6AJ8/ ECH81
V3	2nd FM-1st AM IF Amp.	EF89
V4	Ratio Det. - AM Det. - AVC- AF Amp.	6T8/ EABC80
V5	Tuning Indicator	EM84
V6	Output	6BQ5/ EL84

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA Grundig Majestic PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	50	385							R2582*
B	50	358							
C2	2	385		PRS450V2	BR245		TD-2-450	MT-4502	TVA-1701
C3	5	80		SRE150V5	BBR4-150	TC40	TD-4-150	MT-1504	TVA-1403
C4	25	15		PRS25V25	BBR25-25	TC26	TD-25-25	MT-0225	TVA-1205

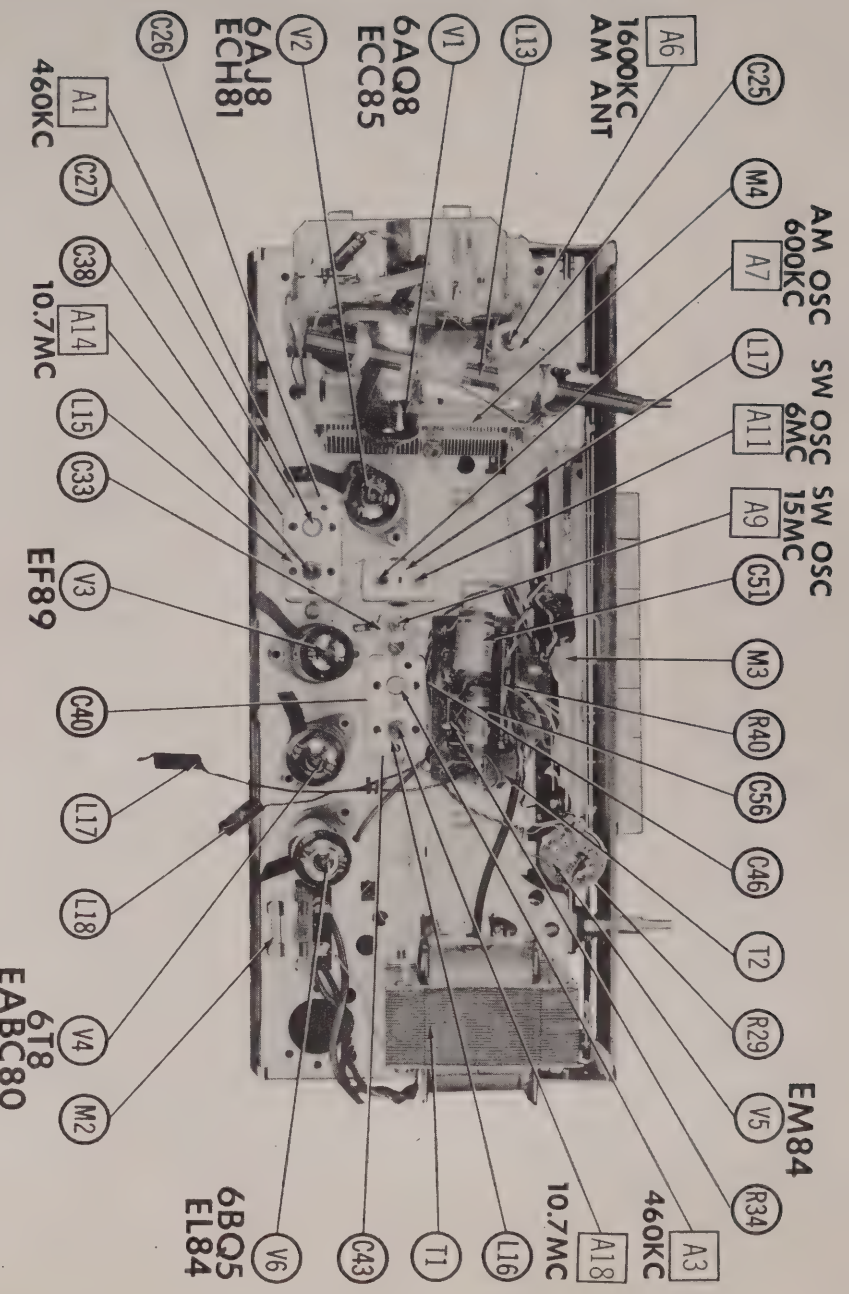
* Non Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA Grundig Majestic PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C5	20			SI 20	D6-200	CTA6Q2C	ZT-542	5GA-Q2	
C6	1000			BPD-001	DD-102	L10D1	DC521	5HK-D1	
C7	5000								
C8	200			BPD-0002	DD-201	L10T2	UC-532	5GA-T2	
C9	35								
C10	1-11								
C11	50			SI50	D6-500	LT6Q5	UC-545	5GA-Q5	
C12	15			SI15	D6-150	LT6Q15	UC-5415	5GA-Q15	
C13	15			SI15	D6-150	LT6Q15	UC-5415	5GA-Q15	
C14	15			SI15	D6-150	LT6Q15	UC-5415	5GA-Q15	
C15	100			1468-0001	D6-101	5W5T1	MC235	1FM-31	
C16	40				D6-400				
C17	5000								
C18	10			SI10	D6-100	LT6Q1	UC-541	5GA-Q1	
C19	100			1468-0001	D6-101	5W5T1	MC235	1FM-31	
C20	1000			1468-001	D6-102	1W5D1	MC255	1FM-21	
C21	.0047	125		P288N-0047	D6-472	CUB6D47	GEM-6247	6TM-D47	
C22	3500								
C23	10			SI10	D6-100	LT6Q1	UC-541		
C24	3-30								
C25	3-30								
C26	10								
C27	150								
C28	.0047	500		P688N-0047	D6-472	CUB6D47	GEM-6247	6TM-D47	
C29	.0047	500		P688N-0047	D6-472	CUB6D47	GEM-6247	6TM-D47	
C30	50			BPD-00005	DD-500	L10Q5	UC-545	5GA-Q5	
C31	2			NP0-SI2		C10V2C			
C32	3-30								
C33	3-30								
C34	435								
C35	50			BPD-00005	DD-500	L10Q5	UC-545	5GA-Q5	
C36	15			SI15	D6-150	LT6Q15	UC-5415	5GA-Q15	
C37	100			1468-0001	D6-101	5W5T1	MC235	1FM-31	
C38	140								
C39	.047	125		P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C40	150								
C41	.0047	500		P688N-0047	D6-472	CUB6D47	GEM-6247	6TM-D47	
C42	.0047	500		P688N-0047	D6-472	CUB6D47	GEM-6247	6TM-D47	
C43	30								
C44	250			1468-00025	D6-251	5W5T25	MC240	1FM-325	
C45	5000			SI5000	D6-502	LT6D5	UC-525	5GA-D5	
C46	300								
C47	100			1468-0001	D6-101	5W5T1	MC235	1FM-31	
C48	7000								
C49	.0033	125		P288N-0033	D6-332	CUB6D33	GEM-6233	6TM-D33	
C50	.068	125		P288N-068		CUB4S68	GEM-4168	4TM-S68	
C51	.15	125		P288N-15		CUB2P15	GEM-2015	2TM-P15	
C52	.022	125		P288N-022		CUB4S22	GEM-4122	2TM-S22	
C53	.01	500		P688N-01	D6-103	CUB6S1	GEM-611	6TM-S1	Note 1

CHASSIS—TOP VIEW



GURNDIG MAJESTIC
MODEL 97

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA Grundig Majestic PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C54	4000			SI4000	D6-402	LT6D4	UC-5240	5GA-D4	
C55	.0047	500		P688N-0047	D6-472	CUB6D47	GEM-6247	6TM-D47	
C56	.0047	500		P688N-0047	D6-472	CUB6D47	GEM-6247	6TM-D47	
C57	.0047	125		P288N-0047	D6-472	CUB6D47	GEM-6247	6TM-D47	

Note 1. Not used in some versions.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Grundig Majestic PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A B	1meg 1.3meg	½ ½	7801-186					Tone Volume, Tap ⓐ 350K

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	Grundig Majestic PART No.	NOTES
R2	100K			
R3	150Ω 5%			
R4	100K			
R5	5600Ω			
R6	1000Ω	1		
R7	560K			
R8	5600Ω			
R9	100K			
R10	1000Ω			
R11	27K	1		
R12	56K			
R13	220Ω			
R14	560K			
R15	100Ω			
R16	15K	1		
R17	560K			
R18	1800Ω			
R19	47K	1		
R20	120Ω			
R21	160Ω			

ITEM No.	RATING OHMS	RATING WATT	Grundig Majestic PART No.	NOTES
R22	56K			
R23	56K			
R24	270K			
R25	470K			
R26	2.2meg			
R27	15meg	1		
R28	5meg			
R29	470K			
R30	56K			
R31	560Ω			
R32	1500Ω			
R33	56K			
R34	3300Ω			
R35	22meg	1		
R36	220K			
R37	56K			
R38	1000Ω			
R39	1meg			
R40	1300Ω	2(WW)		
R41	1400Ω 5%			

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA Grundig Majestic PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V ⓐ .4A	200V ⓐ .054A	6.3V ⓐ 2.6A	BV9078-028					24R11U①	

①Drill new mounting holes

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA Grundig Majestic PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	3700Ω Tapped	2Ω	BV9048-028							

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA Grundig Majestic PART No.	QUAM PART No.	NOTES
SP1	4" x 6"	PM	2Ω	7044-001	46A1Z2 ①	① Drill new mounting holes

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA Grundig Majestic PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	FM Ant. Trans.	9208-037					
L2	RF Choke	HFBV1975/I					
L3	RF Choke	HFBV1956/I					Wound on 100Ω Resistor
L4	FM RF Coil	9226-021					
L5	FM Osc. Coil	9226-022					
L6	RF Choke	HFBV1976/I					
L7	Cathode Choke	HFBV1960/I					
L8	1st FM IF Pri	9226-007					
L9	1st FM IF Coupling Coil	9226-008					
L10	IF Trap Coil	9207-007					
L11	SW Ant. Trans.	9208-032					
L12	RF Choke	HFBV1856					
L13	Loop Stick	9234-001					
L14	BC Osc. Coil SW Osc. Coil	7203-502					
L15	2nd FM IF 1st AM IF	7207-314					
L16	Ratio Det. 2nd AM IF	7207-307					
L17	Speaker Lead Choke	HFBV1700	19-1001	BC-562	4604		1.4 Microhenries
L18	Speaker Lead Choke	HFBV1700	19-1001	BC-562	4604		1.4 Microhenries

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA Grundig Majestic PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M1	.071A	B250C75 ①		60-9150①③	D-56②	①Selenium Type ②Silicon Type ③Two Required

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA Grundig Majestic PART No. FUSE	Grundig Majestic PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M2		.6A 250V						

MISCELLANEOUS

ITEM No.	PART NAME	Grundig Majestic PART No.	NOTES
M3	Dial Lamp		7V .3A
M4	Tuning Cap.	1025-122	AM (Ant. 11-555mmf, Osc. 14-364mmf)
M5	Tuning Cap	9653-604	FM
	AM Pointer	1062-057	
	FM Pointer	1025-076	
	Dial Scale	1062-115	
M6	Switch	7414-402	Pressbutton Block, Function
M7	Switch	7612-025	Pressbutton Block, Tone

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	9616-522	Large, Lower Part
Knob	9616-524	Small, Top Part
Pressbutton	5736E-63	Seven used
Cabinet	1062-014	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT* Folder

EIA MEMBER

KNIGHT MODELS KN-4010 (91RZ750), KN-4020 (91RZ751)

KNIGHT MODELS KN-4010
(91RZ750), KN-4020 (91RZ751)

GENERAL INFORMATION

Models 4010 and 4020 Knight Tape Recorders are mechanically alike. The major differences are in the amplifiers.

These recorders feature fingertip operation for Fast Forward, Playback, Stop, Record and Fast Reverse. They record and play back two tracks of material on standard-width tape. Any reel size up to 7" can be used. Two neon recording level indicators simplify recording level setting. Erase head is automatically positioned when record push button is depressed; new recordings can be made on previously recorded tape or same recording can be played back indefinitely. Recordings can be made from a radio, television receiver or phonograph, as well as a microphone. Recordings can be played through self-contained speakers or an external speaker can be connected to "Ext. Spkr." jack.

Model 4010 has a "Digital Tape Timer" enabling you to locate any selection on a recorded tape.

Two tape speeds are provided, 3 3/4 and 7 1/2 inches per second. Using both tape tracks, recording times are:

Size	3 3/4" Speed	7 1/2" Speed
5" reel	1 hour	1/2 hour
7" reel	2 hours	1 hour

These units operate on 60 cycles, 115 volts AC only. Before connecting, be absolutely certain your line supply agrees with the above specifications.

Supplied by:

Allied Radio Corporation
100 N. Western Ave.
Chicago 10, Illinois

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HOWARD W. SAMS & CO., INC., INDIANAPOLIS, INDIANA

C350

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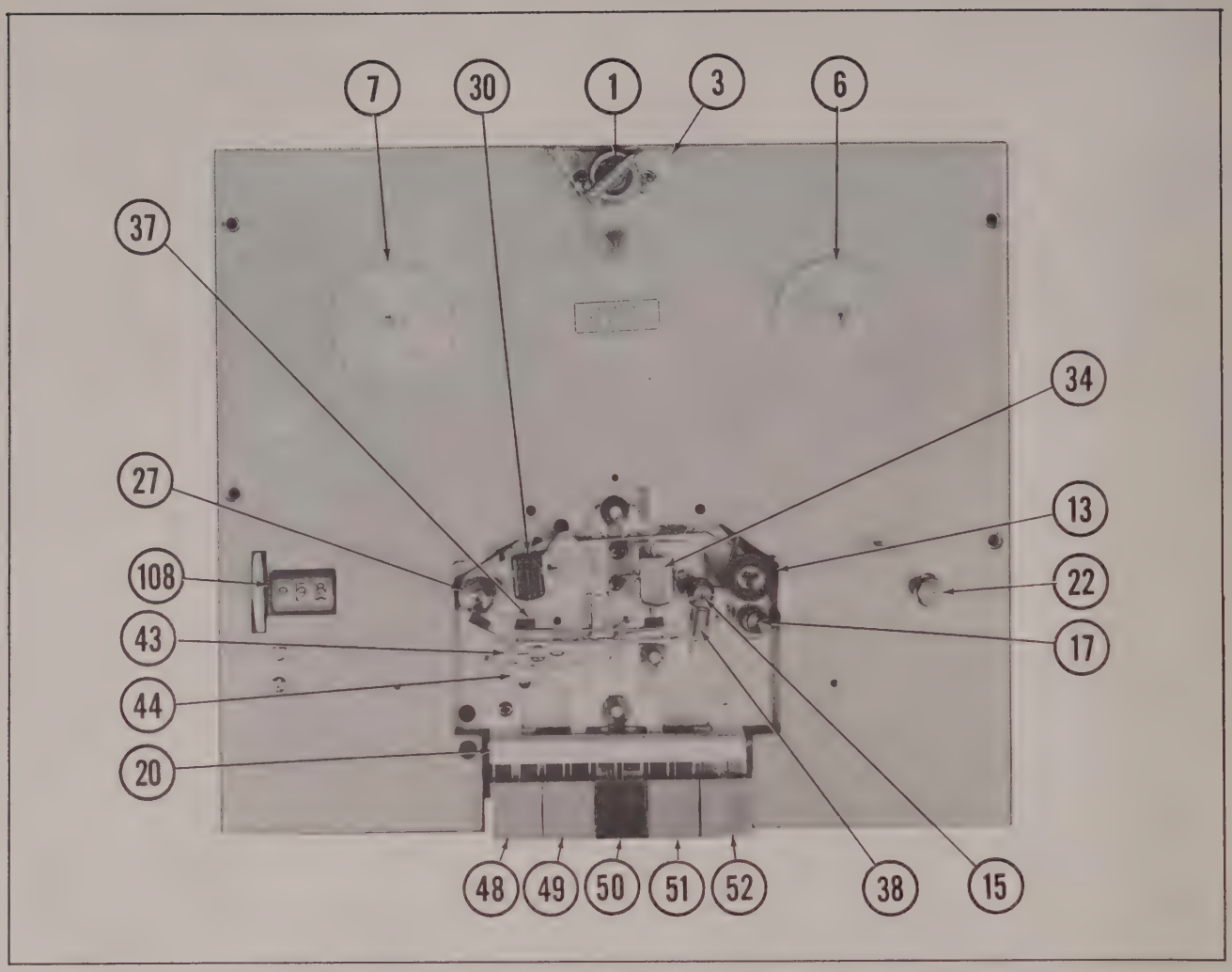


Figure 1. Mechanism Top View - Escutcheon Removed

OPERATING INSTRUCTIONS

Preparing for Operation

1. Remove microphone, tape reels and AC power cord from storage compartment.

2. Depress "Stop" push button.

3. Plug AC cord into a convenient wall receptacle of proper rating.

4. Set speed change control to 3 3/4 or 7 1/2 inches per second as desired.

5. On Model 4010, place Remote-Normal switch in "Normal" position.

Caution: Do not turn speed change control unless "Stop" push button is depressed. When Forward or Reverse push buttons are depressed, Record and Play push buttons are locked so they cannot be depressed, possibly spilling the tape. Push buttons should always be depressed firmly until latched. "Stop" push button must be depressed before changing functions or speeds.

Important: Always depress "Stop" push button when unit is not in use.

Speed Change Knob

Arrow on speed change knob should point at 3 3/4 or 7 1/2 inches per second, according to speed desired.

Caution: Do not turn speed change knob while unit is operating. "Stop" button must be depressed before speed is changed.

Threading Tape

1. Place a full reel of tape on left (supply) spindle, making certain one slot of reel catches protrusion on pan. Unwind about 14" of tape from supply reel.

2. Insert free section of tape in tape slot.

3. Insert free end of tape into one of three slots in hub of right (take-up) reel. While holding tape in place, give reel two or three turns until tape is secured.

4. Dull side of tape should always face away from operator.

To Record from Microphone

1. Turn On-Off switch to left until a click is heard. Left neon light glows when unit is turned on. Allow 30 seconds for unit to warm up.

2. Insert microphone plug into "Microphone" input.

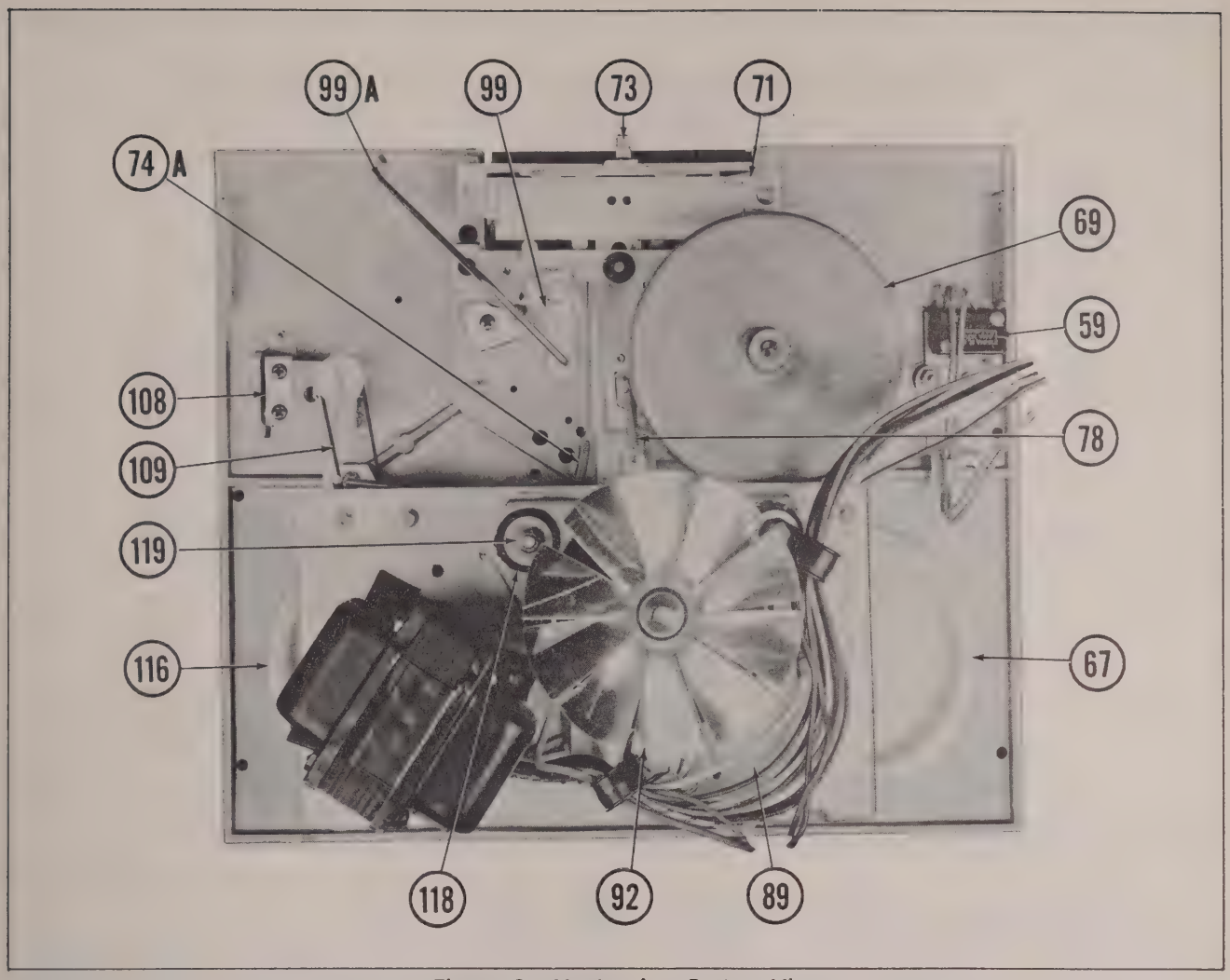


Figure 2. Mechanism Bottom View

3. Move "Release-Lock" Record Knob to left. This releases safety lock, preventing accidental erasure.

4. While holding "Release-Lock" Record Knob, depress "Record" push button until it latches.

5. Adjust volume control until modulation causes right-hand neon light to glow as brightly as left-hand neon light. If volume control is set too high, left-hand neon light will not light, and will cause distortion. Both neon lights should glow for proper recording level.

6. Tone control is automatically disconnected when recording. When recording from radio, set radio tone control for maximum treble.

7. At any time during recording, auxiliary switch on tone control may be operated to monitor recording. This allows speaker to operate during a recording. Be careful to keep microphone far enough from recorder to prevent squeal due to acoustic feedback.

To Record from External Radio, TV, or Phonograph

1. Insert cord plug into Radio-TV-Phono jack.

2. For Radio or TV, connect alligator clips to speaker.

3. For Phonograph, connect alligator clips to playback crystal terminals.

4. Proceed as described under "To Record from Microphone".

Note: Remove patch cord after recording. Black wire on cord is internally grounded. This should be connected to ground side of equipment being recorded.

To Use Second Track

1. Depress "Stop" push button when tape has been wound onto take-up reel.

2. Remove reel containing tape and place on left-hand (supply) pan.

3. Place empty reel on right-hand (take-up) pan.

4. Thread tape as previously described.

To Play Recordings

1. Turn on unit.

2. Thread tape as described under "Threading Tape".

3. Set speed change knob (1) to speed at which recording was made.

4. Depress "Play" push button until it latches.

5. Adjust volume and tone controls to desired listening level.

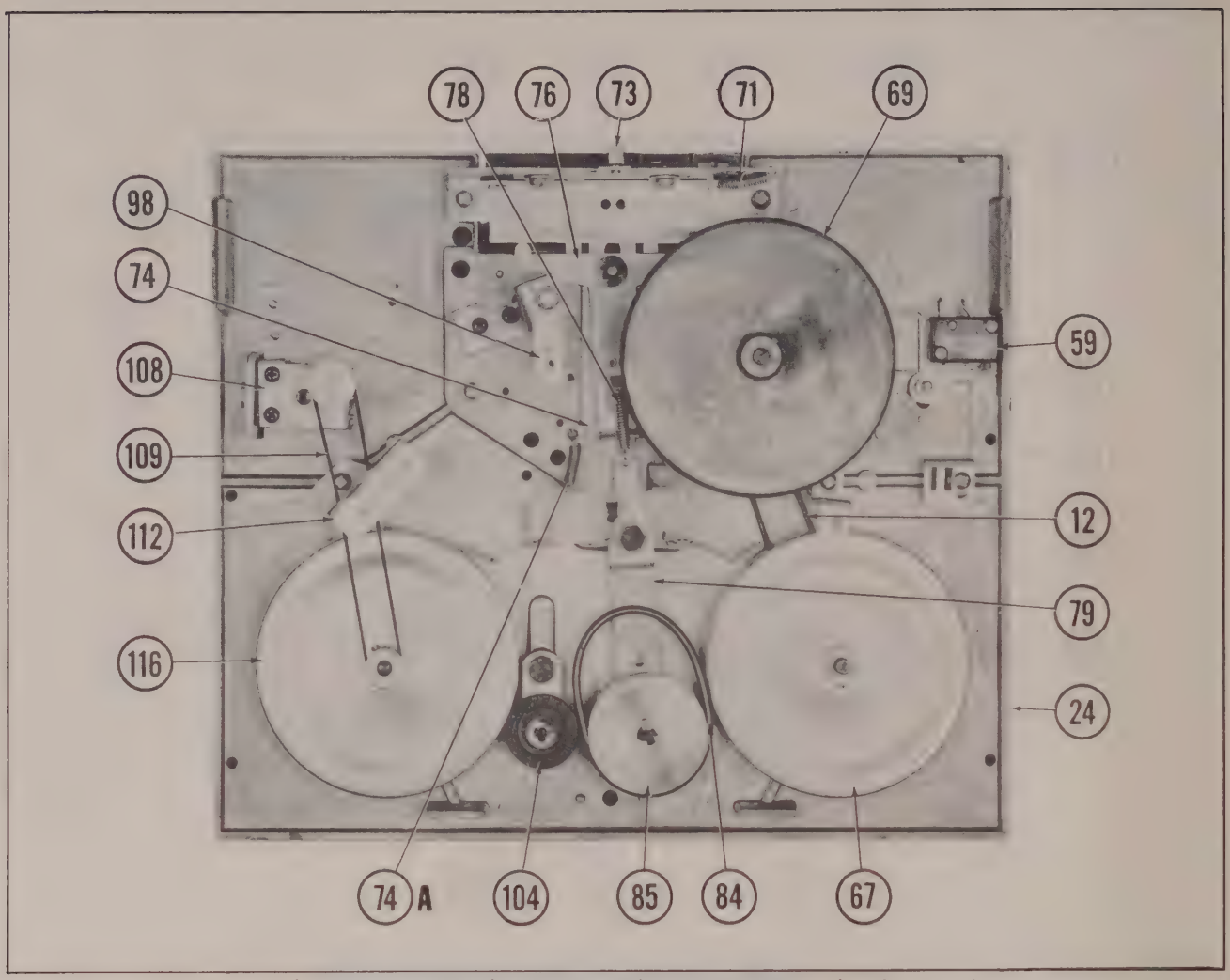


Figure 3. Mechanism Bottom View - Motor Mounting Removed

High-Speed Forward or Reverse

To play over a certain portion of the tape, it is not necessary to rewind entire tape. By depressing "Forward" or "Reverse" push buttons, tape rapidly advances or reverses.

Several minutes of normal recording can be skipped in a few seconds by using the "Forward" and "Reverse" push buttons.

Tape Timer

When making recordings or playing a recorded tape, if you wish to play back a certain recording, note reading on timer scale at the time particular recording is being made or heard. Rewind tape until number you have noted appears on scale. Depress "Stop" push button; then depress "Play" push button and you are now listening to your desired recording.

When starting a new reel of tape or rerecording a reel, reset indicator pointer to "0" by rotating reset knob. Starting at "0" on all tapes, the number location for each selection on any reel can be catalogued.

To Edit and Splice Tape

Note: Since it is impossible to edit and splice one track without affecting the other track, recordings to be edited should be limited to one track only.

1. Tape may be edited by cutting out unwanted portions, or by joining selections into another sequence. Announcements, etc., may be inserted between selections. Unused sections of tape can be spliced for re-use.

2. For best results, cut tape at a slight diagonal. Join ends with splicing tape on glossy side and trim any excessive width.

Erasing Recorded Material

When record button is depressed, erase head is automatically positioned and erases any previous recording. You may erase undesired material without recording by depressing the "Record" push button and turning the volume control knob to minimum volume position or extreme counterclockwise position. One track at a time is erased. To erase second track, reverse the reels and repeat the foregoing operation.

To Use Recorder as a Public Address System

Insert microphone plug into "Microphone" input jack. Plug in an extension speaker (or speakers, if desired), and depress "Record" button. Set volume and tone controls to desired listening level. A recording can be made at the same time with a tape placed on the unit in the normal manner.

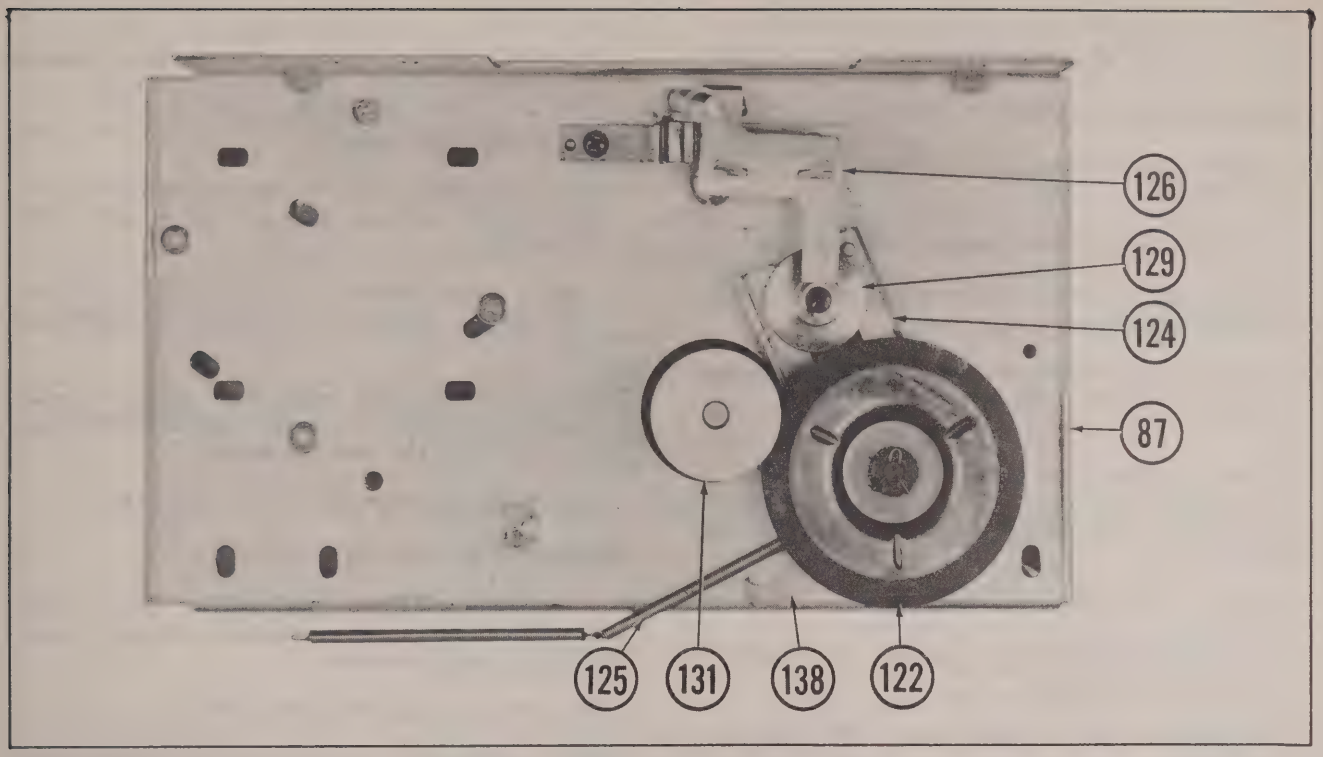


Figure 4. Motor Mounting - Top View

Caution: When using public address feature, see that microphone is as far away as possible from the speakers to prevent "feedback" squeal.

Remote Control Operation for Model 4010

A socket and switch to allow remote operation, either recording or playback, up to 18 feet are provided This is accomplished by means of a remote control cable (Foot Control-No. 96R638; Chairside Control-No. 96R636). Connect attachment cord as follows:

1. Insert Remote Control cable plug into Remote socket. Be sure Remote Control switch on end of cable is in Standby position.

2. With control switch in "Normal" position, start unit in normal manner (Record or Play) and set volume control to proper level.

3. Place control switch in remote position. Tape will stop. Recorder can now be operated (start and stop) by means of Remote Cable switch. When starting recording by means of Remote Control, switch should be rotated to "Motor" position. After a slight pause, rotate to "Record-Play" position. To stop recording or playback, rotate control switch directly to "Standby" position, pausing slightly at "Motor" position.

Low-Level, High-Impedance Output

"TV-Phono-Radio" input jack serves as an input to recording section when "Record" button is depressed and as a low-level output of tape playing circuit when "Play" button is depressed. Output is constant and is approximately .1 volt. Volume control varies the sound coming from set speaker only. It has no effect on the output at the "TV-Phono-Radio" jack. To drive an external high-gain amplifier, best results are obtained by using the "TV-Phono-Radio" jack.

Automatic Shutoff On Model 4010

1. Two tape guide posts are located on top of the tape deck and to the right of the main escutcheon.

2. To utilize shutoff feature, thread tape as described under "Threading Tape". Place tape on far side of left guide post and on near side of right guide post.

3. Turn On-Off knob to Off and depress "Play" button until it latches. Push shutoff switch guide post gently to the rear toward take-up reel, until slack in tape has been taken up and switch is set. Recorder will now be operating and it is only necessary to set volume and tone controls as desired. When tape is completed and on take-up reel, entire unit shuts off.

Note: It is not necessary to use automatic shutoff. Turn On-Off switch to On position and thread tape in usual manner as described under "Threading Tape".

To Use Monitor or VU Meter Jack on Model 4010

Plug headset or VU meter into jack marked "600 Ohm" in rear compartment of cabinet. Recording being made can now be monitored or checked.

Maintenance

All rotating parts have generous-sized oilite bearings. These are factory-lubricated and should require no further attention.

After approximately 20 hours of use, foreign matter under plastic cover should be cleaned out. A drop of oil on all sliding levers is advisable. Rubber capstan on drive shaft and recording head surface should be cleaned with a soft cloth and alcohol or lighter fluid.

ADJUSTMENTS

Disassembly Instructions

1. Remove four Phillips head screws from top escutcheon.
2. Remove record release and lock control knob.
3. Remove six Phillips head screws on front escutcheon. Remove escutcheon.
4. Lift unit out of case. Remove leads from speaker before completely removing unit.

Record-Play Head Adjustment

To adjust record-play head (34) for maximum response:

1. Remove rear cover escutcheon (5).
2. Properly thread an alignment tape or a good recorded tape on unit.
3. Set controls as described under "To Play Recordings".
4. To adjust for maximum high-frequency response, turn adjusting screw (35) until maximum high-frequency output is obtained.

Pressure Pad Adjustment

1. Remove front and rear escutcheons (5 and 9).
2. Depress "Play" button. Do not turn on recorder.
3. With pencil-type postal scale, check pressure needed to pull pad away from tape. Test should be made on end of pressure pad mounting spring (37). Adjust pressure pad for 1 3/4 ± 1/4 oz. pressure. essure.

   (a) Record head pressure pad is adjusted by locked adjustment screw (42A).

   (b) Guide post pressure pad (42) is adjusted by bending pressure pad spring. It must be adjusted for minimum pressure against tape.

4. After adjusting, depress "Stop" button and replace trim covers.

Erase Head Adjustment

1. Thread tape properly. Turn on recorder and depress "Record" button. Run tape for a few seconds. Then, turn off recorder but leave "Record" button depressed.
2. With escutcheons removed, check to see if erase head (30) is parallel with tape.
3. On Model 4020, check to see if top edge of tape coincides with top end of diagonal slot in erase head (junction of long diagonal and short vertical slots). To adjust tape level, loosen set screw (26) (see Exploded View), and rotate tape guide post (27) to move tape up or down. Tighten set screw (26).
4. On Model 4010, no adjustment for the erase head is provided.

Brake Shoe Adjustment

1. To adjust brake shoes, the mechanism must be removed from carrying case and the speaker disconnected.
2. With all push buttons in up position, brake pads (75 and 97) should clear drums by approximately 1/8".
3. Depress "Stop" push button while observing brake shoes. Both brake shoes must contact drums simultaneously and with equal pressure.
4. To adjust, bend spring arm (75A and 97A).

Adjustment for Slow Take-Up Reel

In some instances, spring drive belt (12) may stretch after a while. If this happens, the belt should be removed and shortened.

1. Cut off 3 to 5 turns of spring belt.

Note: The spring belt is made so that one end will twist into tip of the other end. Therefore, cut turns from the large end of belt.

2. Twist ends together and replace belt.

Indicator Lights (Normal and Overload)

"Normal" and "Overload" indicator lights are preset and there are no firing adjustments. If either light must be changed, both should be replaced with a matched set of neon indicators to insure proper recording level indication.

Bias Adjustment

Using no tape, turn on recorder and depress "Record" button. To determine whether bias is within satisfactory limits without dismantling unit, connect a VTVM from top lug of recording head to chassis. If 75 to 100 volts are present, no adjustment is necessary.

If readings are outside this range, proceed as follows:

1. Try new tubes.
2. If still not within range, remove chassis shield and connect a low-capacity VTVM from Pin1 of 6AQ5 to chassis and adjust trimmer (25A) for a reading of 2.5 volts. This provides the best performance.

CLEANING

Record head, capstan and pressure roller may accumulate tape coating residue, which is worn off the tape as it passes these parts. If this happens, clean the head surfaces, capstan and pressure roller with a soft cloth and alcohol.

Caution: Do not clean the recording head with a brush. This could mar the lamination.

LUBRICATION

All rotating parts are provided with generous-sized oilite bearings. These bearings are factory lubricated and require no further attention.

Occasionally clean out the foreign matter under the plastic push-button cover. A small drop of oil on sliding lever members is advisable.

TROUBLE CHART

Symptom	Cause	Remedy
Tape overruns or spills when "Stop" button is depressed during Fast Forward or Rewind.	1. Brake shoes out of adjustment. (75 and 97).	1. See "Brake Shoe Adjustment".
	2. Brake pads worn out.	2. Replace brake pads (75 and 97).
Fails to record.	1. Tape pressure pad not adjusted properly, resulting in tape not being held against recording head.	1. See "Pressure Pad Adjustment".
	2. Record head loose on its mounting.	2. Adjust head and tighten into position, as described under "Record-Play Head Adjustment".
	3. Dull-coated side of recording tape faces outward on reel.	3. Wind tape onto an empty reel, making sure dull-coated side faces inward.
Push buttons fail to latch into position.	1. Lock plate spring (56) loose or broken, resulting in lock plate not being held against hinge bracket (54).	1. Replace lock plate spring (56).
Fails to erase.	1. Spring (43) loose or broken, resulting in erase head (30) not being pulled forward to engage tape.	1. Replace spring (43).
	2. Erase head not properly aligned.	2. See "Erase Head Adjustment".
No fast forward or reverse.	1. Idler lever tension spring (78) may be loose or broken; if so, idler lever (79) will not be actuated.	1. Replace spring (78).
	2. Idler driver belt (84) improperly connected.	2. Make sure idler driver belt (84) is properly connected.
No drive on record or playback.	1. Idler tension spring (125) loose or broken, not holding idler wheel (122) in engagement with motor pulley (131) and flywheel (69).	1. Replace idler tension spring (125).
	2. Idler slide plate (124) binding on slide bushing (129) thus preventing idler from moving forward.	2. Clean and lubricate idler slide plate (124).
Tape fails to wind on reel during record or playback.	1. Reel drive spring (12) loose or broken.	1. Replace spring (12).
Speed variation, or wow.	1. Check capstan (17), pinch roller (13), idler (122), motor pulley (131), and flywheel (69) for oil or foreign material.	1. Clean parts with cleaning fluid.
	2. Check motor pulley (131) for tightness.	2. Make sure motor pulley (131) is secured to motor shaft.
	3. Idler tension spring (125) not holding idler engaged with motor pulley and flywheel.	3. Replace spring (125).
	4. Idler slide plate (124) binding on slide bushing (129), preventing idler wheel (122) from making positive contact with motor pulley and flywheel.	4. Clean and lubricate idler slide plate (124).

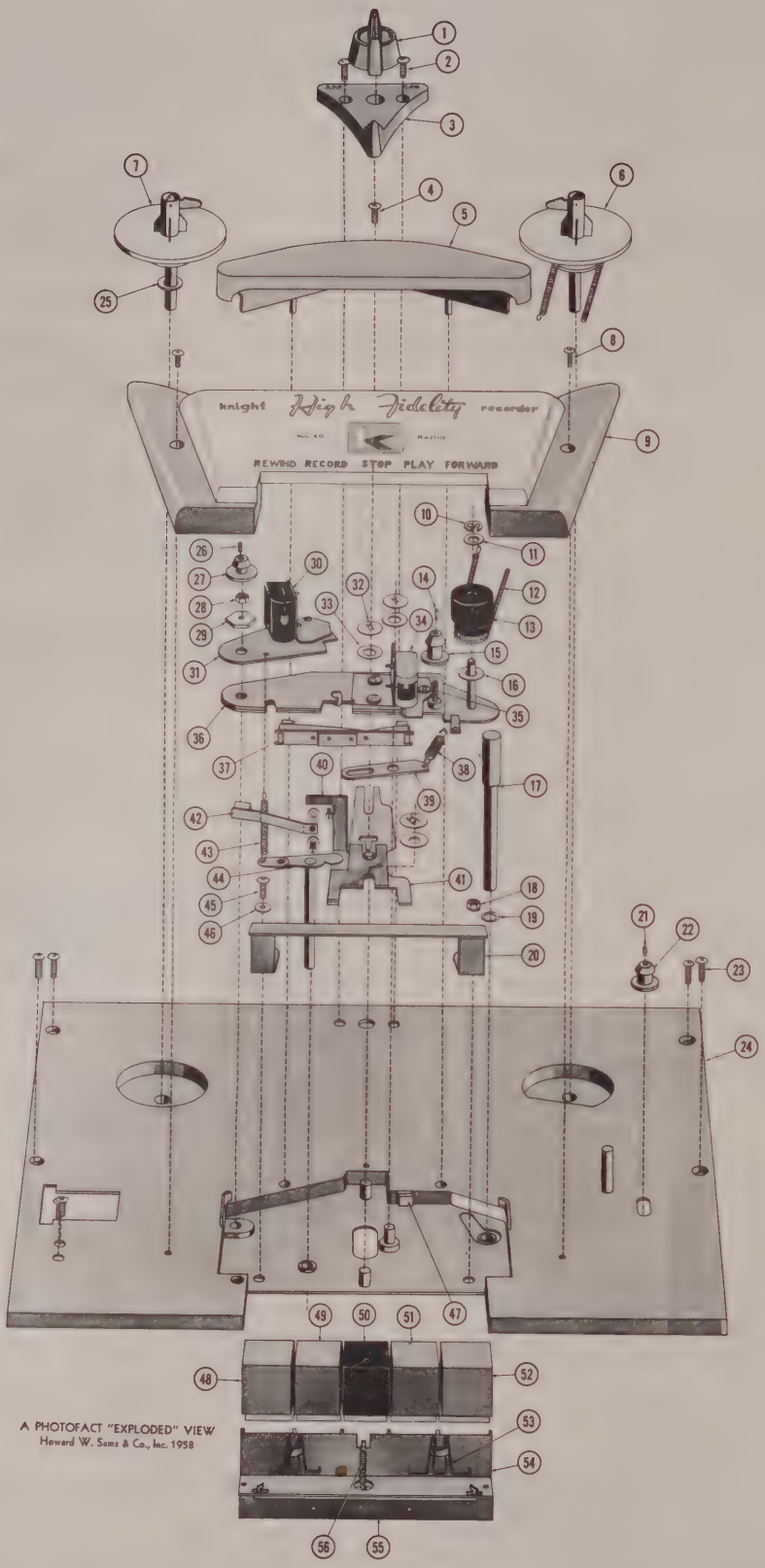


Figure 5A. Exploded View Of Parts Above Base Plate

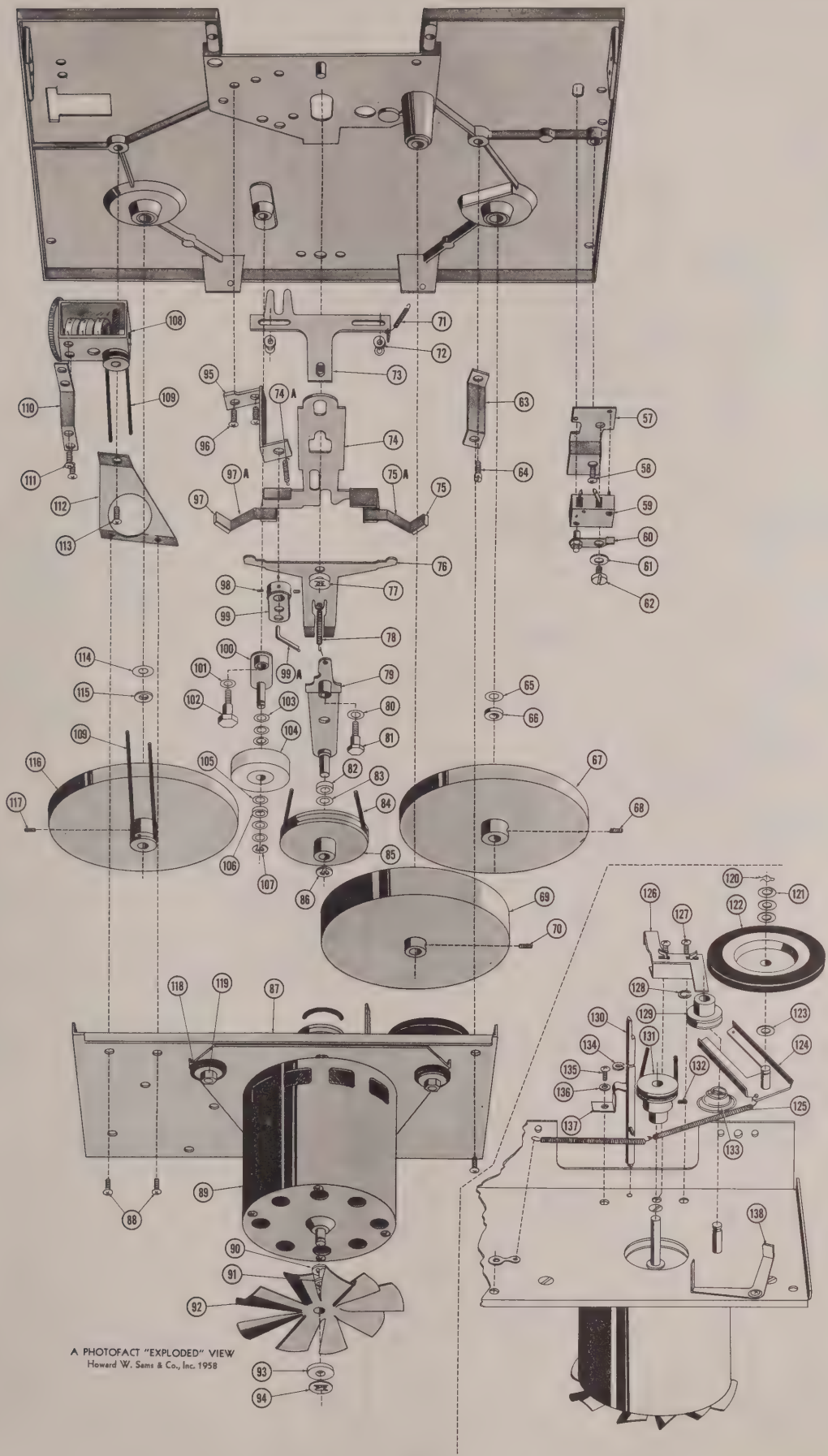
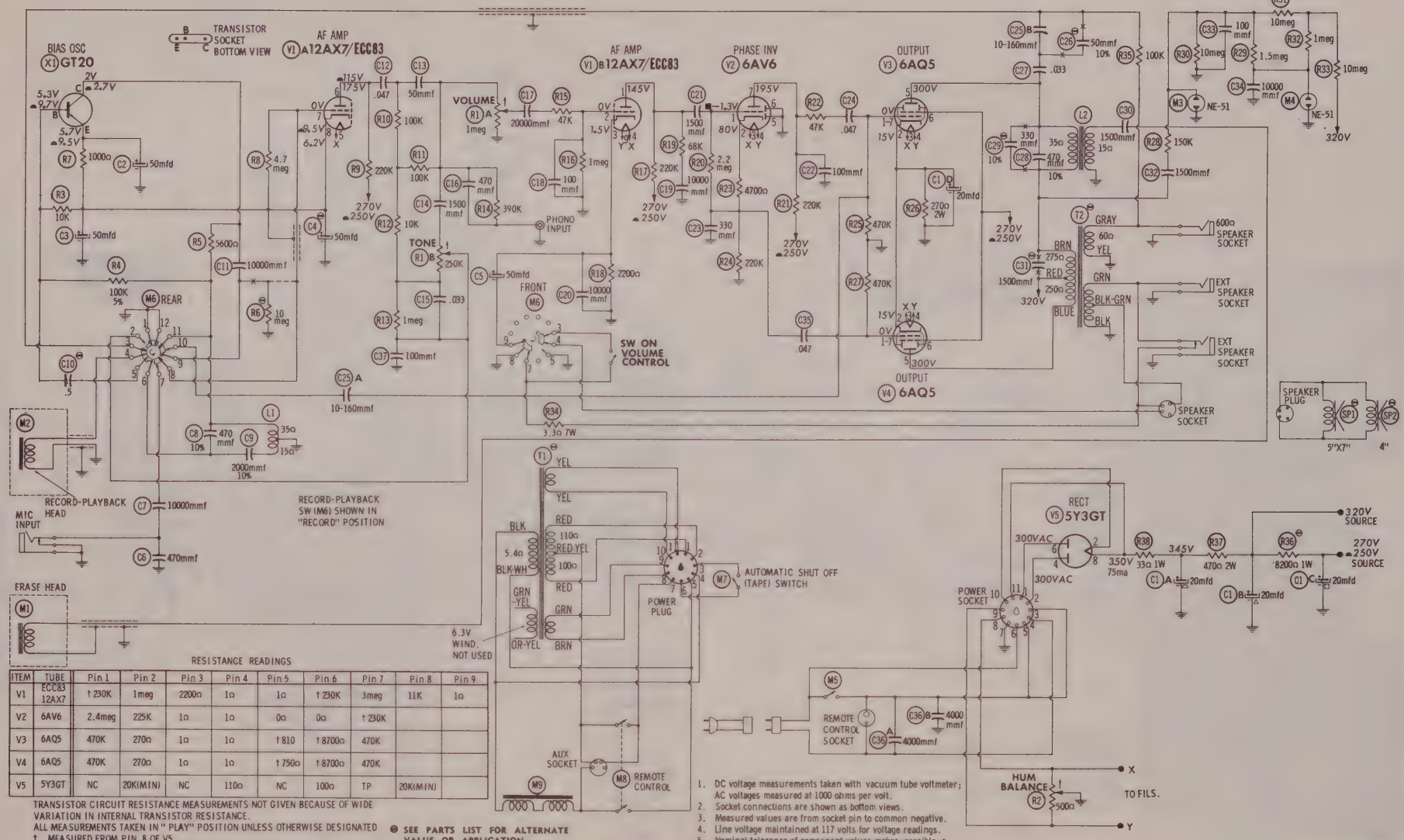


Figure 5B. Exploded View Of Parts Below Base Plate



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC83 12AX7	†230K	1meg	2200Ω	1Ω	1Ω	†230K	3meg	11K	1Ω
V2	6AV6	2.4meg	225K	1Ω	1Ω	0Ω	0Ω	†230K		
V3	6AQ5	470K	270Ω	1Ω	1Ω	†810	†8700Ω	470K		
V4	6AQ5	470K	270Ω	1Ω	1Ω	†750Ω	†8700Ω	470K		
V5	5Y3GT	NC	20K(MIN)	NC	110Ω	NC	100Ω	TP	20K(MIN)	

TRANSISTOR CIRCUIT RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.
ALL MEASUREMENTS TAKEN IN " PLAY" POSITION UNLESS OTHERWISE DESIGNATED
† MEASURED FROM PIN 8 OF V5
• MEASURED IN "RECORD" POSITION
▪ MEASURED FROM PIN 2 OF V2
NC NO CONNECTION
TP TIE POINT

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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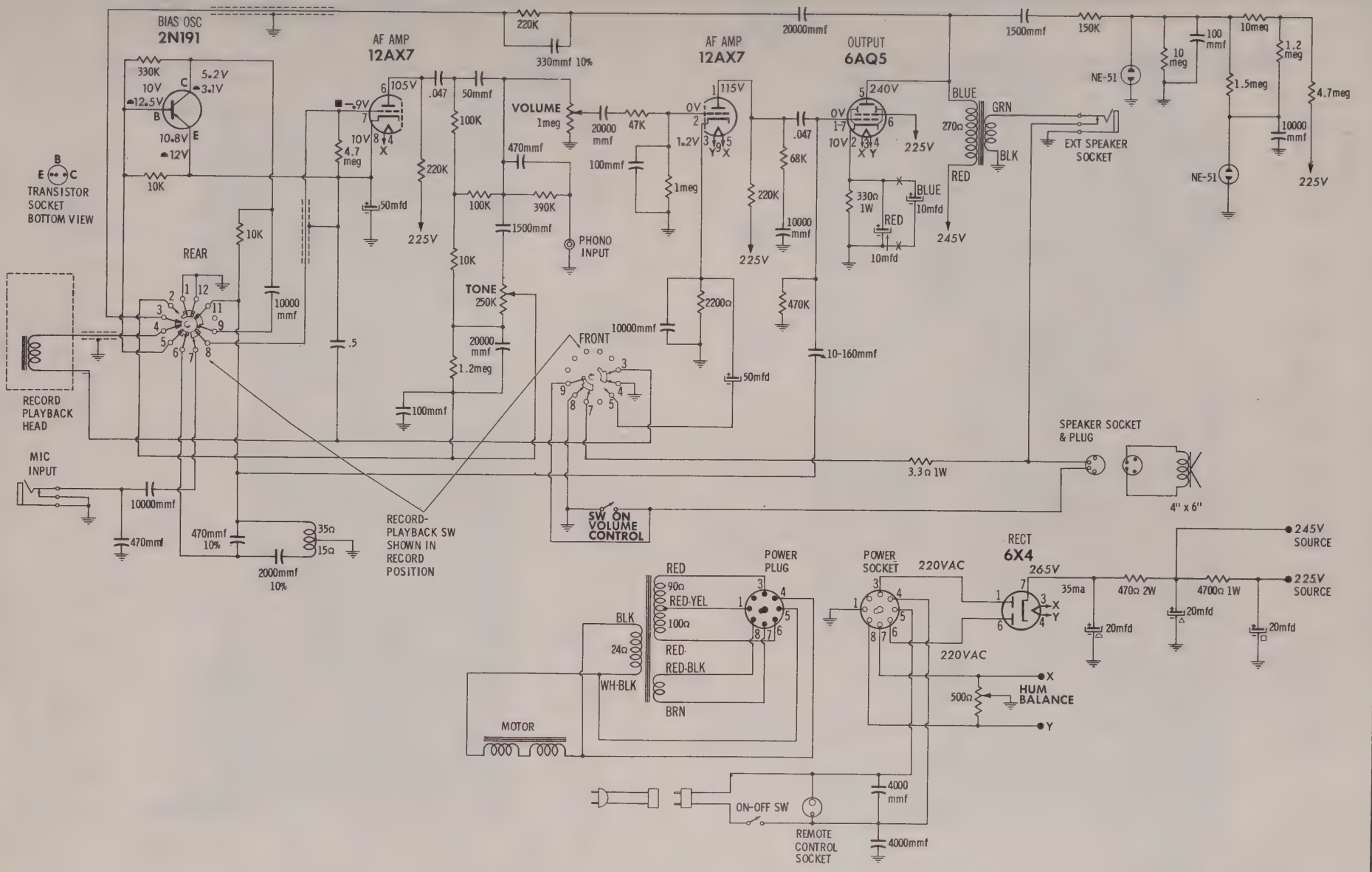
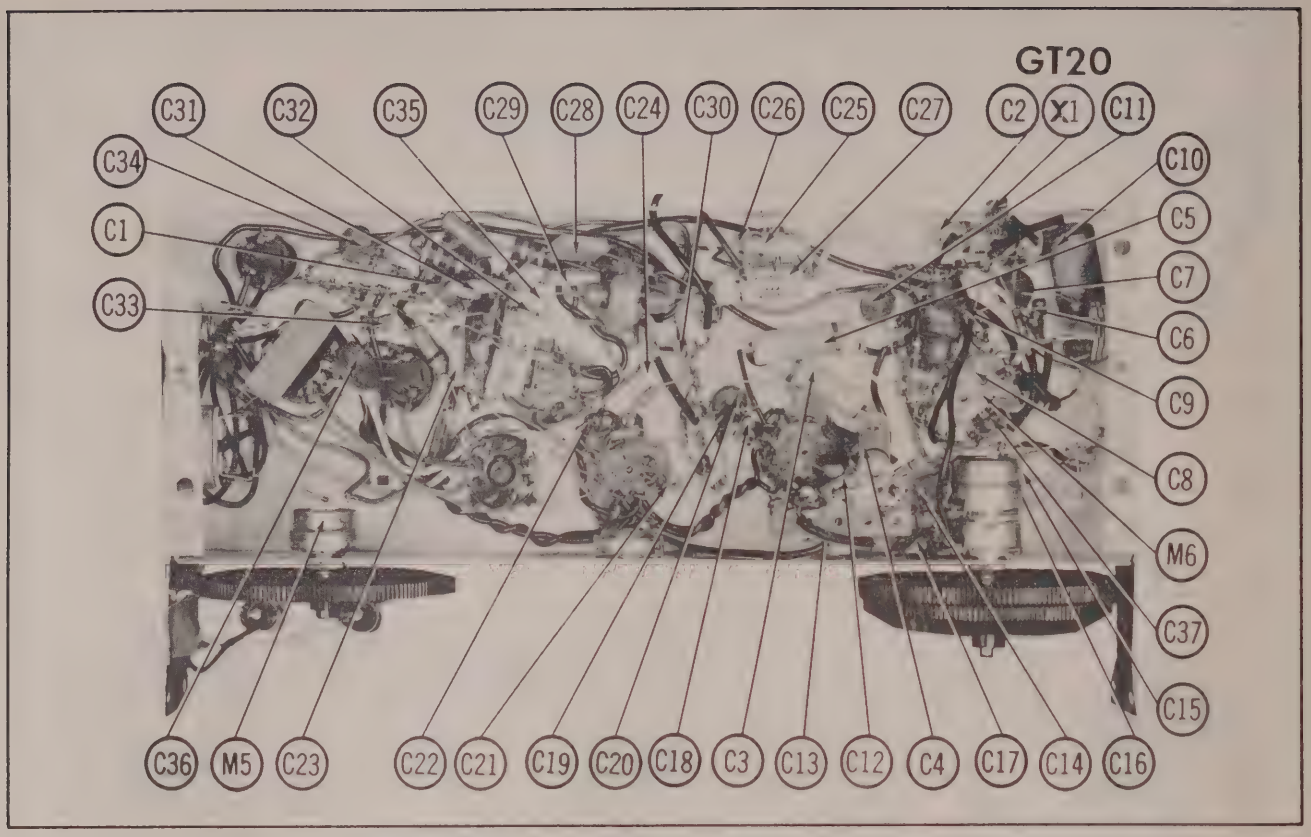
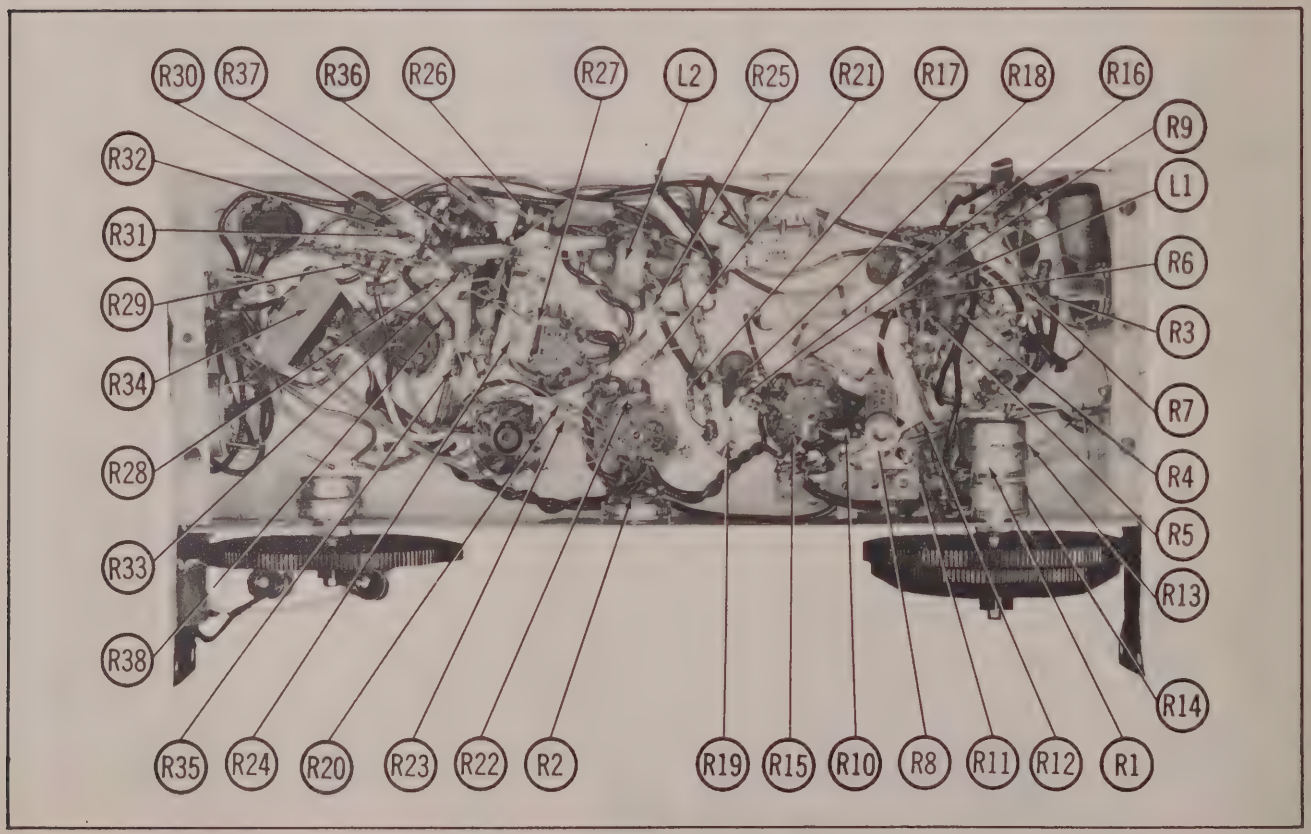


Schematic Diagram - Model KN-4020



Chassis Bottom View- Capacitor & Miscellaneous Ident.



Chassis Bottom View- Resistor & Inductor Ident.

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE
V1	AF Amplifier	12AX7 / ECC83
V2	Phase Inverter	6AV6
V3	Output	6AQ5

ITEM No.	USE	TYPE
V4	Output	6AQ5
V5	Rectifier	5Y3GT

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	GT20	Bias Oscillator			2N465		

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	Knight PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	● 20	450		AFH4-67	D0520	FP444	TMQ-83	Q-340	TVL-4724, 2
B	▲ 20	450							
C	■ 20	450							
D	20	25							
C2	50	6		SRE6V50	BBR50-6	TT6X50	TD-50-6	MMT-650	TVA-1100
C3	50	6		SRE6V50	BBR50-6	TT6X50	TD-50-6	MMT-650	TVA-1100
C4	50	6	①	SRE6V50	BBR50-6	TT6X50	TD-50-6	MMT-650	TVA-1100
C5	50	6		SRE6V50	BBR50-6	TT6X50	TD-50-6	MMT-650	TVA-1100

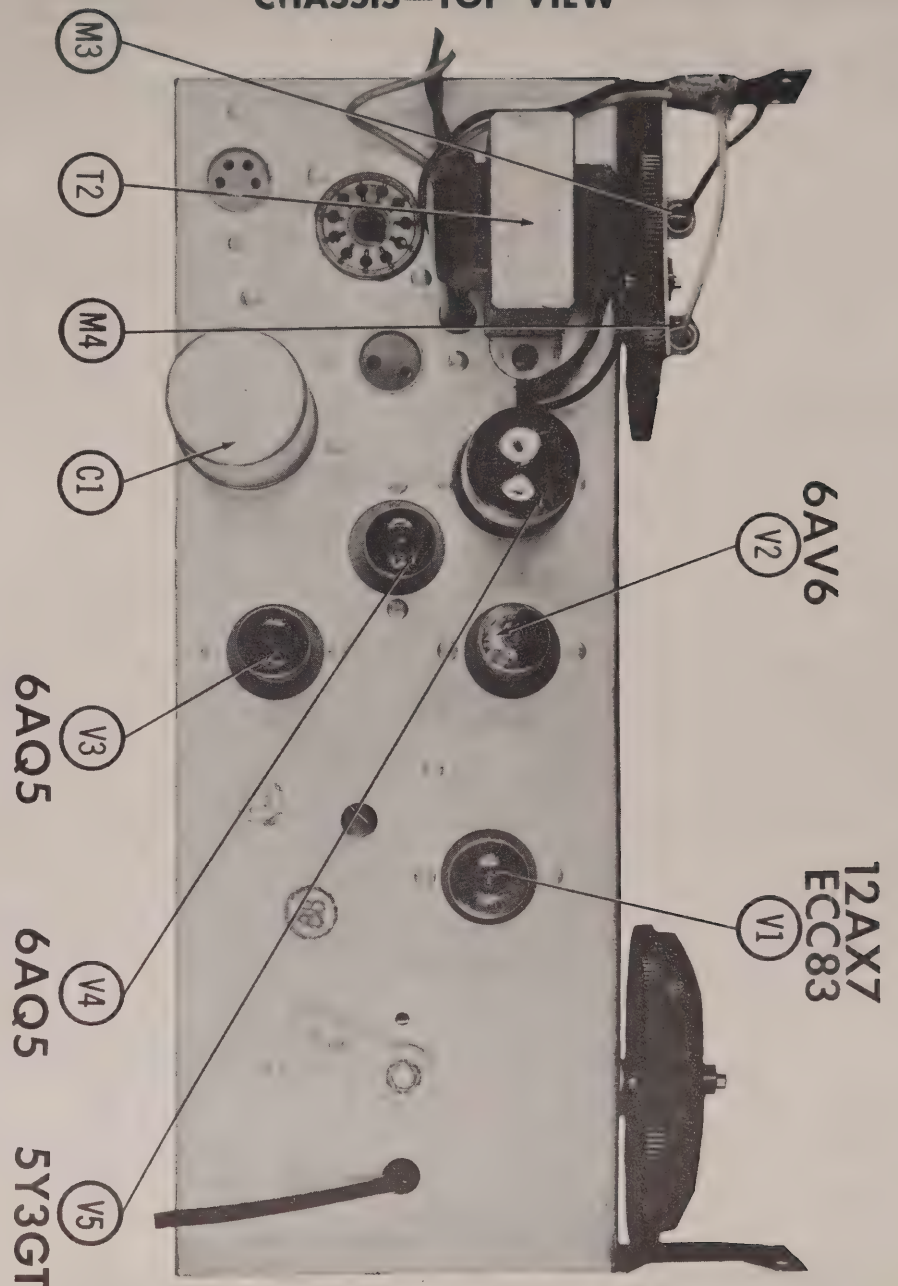
① Not used in some versions.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	Knight PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C6	470			SI470	D6-471	LT6T47	UC-5347	5GA-T47	
C7	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C8	470			1469-00047	MD-471	5R5T47		MS-347	10%
C9	2000								10%
C10	.5	100		P288N-5		CUB2P5	GEM-205	2TM-P5	①
C11	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C12	.047	400		P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C13	50			1468-00005	DD-500	5W5Q5	MC225	1FM-45	
C14	1500			SI1500	D6-152	LT6D15	UC-5215	5HK-D15	
C15	.033	400		P488N-033		CUB6S33	GEM-4133	6TM-S33	
C16	470			SI470	D6-471	LT6T47	UC-5347	5GA-T47	
C17	20000			BPD-02	DD-203	BYB6S2		5HK-S2	
C18	100			SI100	D6-101	LT6T1	UC-531	5GA-T1	
C19	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C20	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C21	1500			SI1500	D6-152	LT6D15	UC-5215	5HK-D15	
C22	100			SI100	D6-101	LT6T1	UC-531	5GA-T1	
C23	330			1468-00033	DD-331	5W5T33		1FM-333	
C24	.047	400		P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C25A	10-160								
B	10-160								
C26	50			1469-00005	D6-500	22R5Q5	MCB225	MS-45	10%②
C27	.033	400		P488N-033		CUB6S33	GEM-4133	6TM-S33	
C28	470			1469-00047	MD-471	5R5T47		MS-347	10% ③
C29	330			1469-00033	MD-331	5R5T33		MS-333	10% ③
C30	1500			SI1500	D6-152	LT6D15	UC-5215	5HK-D15	
C31	1500			1468-0015	DD-152	1W5D15	MC-256	1FM-215	②
C32	1500			SI1500	D6-152	LT6D15	UC-5215	5HK-D15	
C33	100			SI100	D6-101	LT6T1	UC-531	5GA-T1	

CHASSIS—TOP VIEW



KNIGHT MODELS KN-4010 (91R7750), KN-4020 (91R7751)

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA KNIGHT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C34	10000			BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C35	.047	400		P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C36A	4000			BPD-2X004	DD-402	BYA10D4	DCD524	5HK-2D4	
B	4000				DD-402	BYA10D4			
C37	100			SI100	D6-101	L10T1	UC-531	5GA-T1	

①Some versions may use .47mfd in this application
②Not used in some versions.
③When C28 is 800mmf, C29 is not used.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Knight PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	B11252	F1-52			■ UE3832	Volume
B	250K	½		R2-35				Tone
C	Switch			KB-1 or KR-1*				
R2A	500Ω	½	8-240	AB-4	A47-500-S	B11-103	PTA52L	Record Hum Adj.
B	Shaft			AK-1	FKS-1/4	SK2	Not Req.	

*Use KR onCRL "Red Label" controls and KB on "Blue Label" controls
■ "STA-LOC" equivalent: FB16A, 0F812, RU254A, IS1250, US-41

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	Knight PART No.	NOTES
R3	10K			
R4	100K 5%			
R5	5600Ω			
R6	10meg			Note 1
R7	1000Ω			
R8	4.7meg			
R9	220K			
R10	100K			
R11	100K			
R12	10K			
R13	1meg			
R14	390K			
R15	47K			
R16	1meg			
R17	220K			
R18	2200Ω			
R19	68K			
R20	2.2meg			

ITEM No.	RATING OHMS	RATING WATT	Knight PART No.	NOTES
R21	220K			
R22	47K			
R23	4700Ω			
R24	220K			
R25	470K			
R26	270Ω	2		
R27	470K			
R28	150K			
R29	1.5meg			
R30	10meg			
R31	10meg			
R32	1meg			
R33	10meg			
R34	3.3Ω	7		
R35	100K			
R36	8200Ω	1		Note 2
R37	470Ω	2		
R38	33Ω	1		

Note 1. Some versions may use 15 meg in this application.
Note 2. Some versions may use 4700Ω 1W in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA Knight PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V	600V CT	5V	D9278-0 ①	P9304				22R04③	
	ⓐ.59A	ⓐ.075A	ⓐ2A							
	SEC. 3	SEC. 4	SEC. 5							
	6.3V	6.3V								
	ⓐ1.8A	(Not Used)								
	PRI.	SEC.1	SEC. 2							
	117V	600V CT	6.3V	②	P9212	P-3149④		PC8419	24R12U	
	ⓐ1.03A	ⓐ.035A	ⓐ1.3A							

①Used in Model KN-4010
②Used in Model KN-4020
③Use universal mounting brackets
④Tape 5V winding

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.1	Knight PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	7900Ω CT	3-4Ω CT	C-9277-C ①							①Used in Model KN-4010
		SEC. 2								②Used in Model KN-4020
		600Ω								
	5200Ω	3-4Ω	C-9264-E ②							

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA Knight PART No.	QUAM PART No.	NOTES
SP1	5" x 7"	PM	3-4Ω	C30.355-1①	57A21	①Used in Model KN-4010
SP2	4"	PM	6-8Ω	C30.352-2①	4A07Z7.5	②Used in Model KN-4020
	4" x 6"	PM	3-4Ω	②	46A15	

COILS (RF-IF)

ITEM No.	USE	Knight PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Bias Osc.						
L2	Erase Head Coupling Trans.						

MISCELLANEOUS

ITEM No.	PART NAME	Knight PART No.	NOTES
M1	Erase Head		
M2	Record-Playback Head		
M3	Lamp		NE-51
M4	Lamp		NE-51
M5	Switch		Power On-Off, Rotary Snap Type
M6	Switch		Record-Playback, Rotary Wafer Type
M7	Switch		Automatic Shut Off (Tape)
M8	Switch		Remote Control
M9	Motor		

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

Ref. No.	Part No.	Description
1	C-13.253-8	Speed Shift Knob (Gray)
2	57-4C-610-5	#6-32 x 5/8 Phillips O. H. M. S.
3	C-13.360	Speed Shift Escutcheon
4		Phillips Screw
5		Rear Escutcheon
6	C-13.318-0	Nylon Reel Pan & Shaft Ass'y.
7	C-13.318-0	Nylon Reel Pan & Shaft Ass'y.
8	57-4C-610-5	#6-32 x 5/8 Phillips O. H. M. S.
9		Front Escutcheon
10		"E" Ring, .3/16" Shaft
11	B-28.163	Linen Washer
12	B-31.351	Reel Drive Spring (Belt)
13		Pinch Roller
14	57-3439	#6-32 x 3/16 Bristol Hd. Set Screw
15	B-32282	Tape Guide Post (Right)
16	B-28.163	Linen Washer
17	B-32.379	Capstan Shaft
18	48-2219-1	#6-32 x 5/16 Keps Hex Nut
19		Washer
20	B-19.858	Push-Button Retaining Bracket
21		Set Screw
22		Tape Guide Post for Automatic Shutoff
23	57-4C-816-5	#8-32 x 1 Phillips O. H. M. S.
24	35.1068-2	Baseplate
25	B-28.163	Linen Washer
26	57-3439	#6-32 x 3/16 Bristol Hd. Set Screw
27	B-32.300	Tape Guide Post (Left)
28	48-410-1	#6-32 Hex Nut
29	B-32.260	Tape Guide Post Spacer
30	C-35.756-1	Erase Head (Model 4020) Erase Head (Model 4010)
31	B-19.872-1	Erase Head Mtg. Plate
32	B-33.412	Push-On Stud Nut, 3/16" Stud
33	73-2241-148F	Flat Washer, 1/2" O.D.X. .205" I.D. x 1/32"
34	B-36.212	Play-Record Head
35	57-3102-1	#4-36 x 1/4" R. H. M. S. (Azimuth Adj.)
36	C-35.1067	Pinch Roller & Play-Record Hd. Ass'y.
37	B-35.1047-1	Pressure Pad Spring Ass'y.
38		Pinch Roller Tension Spring
39		Playback Actuating Lever
40	B-35.1045	Playback Slide Plate Ass'y
41	B-19.868	Record Slide Plate
42	B-31.334	Felt Pad (2)
43	B-31.361	Erase Head Tension Spring
44	B-35.1025	Record Actuating Lever Ass'y
45	57-1C-603-2	#6-32 x 3/16" Phillips B. H. M. S.
46	73-2231-4	#6 Int. Lockwasher
47		Rubber Bumper
48	B-13.258-5	Push Button (Gray)
49	B-13.258-5	Push Button (Gray)
50	B-13.258-8	Push Button (Black)
51	B-13.258-5	Push Button (Gray)
52	B-13.258-5	Push Button (Gray)
53		Spring
54	B-19.859	Hinge Bracket for Push Buttons
55	B-19.1364-1	Record Lock Mtg. Plate
56	B-31.343	Lock Plate Spring
57	B-19.1374	Stop Switch Mtg. Bracket
58	57-6C-805-1	#8-32 x 5/16" Phillips R. H. M. S.
59		Switch
60	B-19.1367	Actuating Lever
61	B-32.291-1	Shouldered Washer
62	57-11C-804-1	#8-32 x 1/4" B. H. M. S
63	B-19.862	Angle Brakt. for Mtg. Drive Ass'y.
64	57-6C-805-1	#8-32 x 5/16" Phillips R. H. M. S.
65		Linen Washer
66		Washer
67	B-35.1050-1	Brake Drum & Bushing Ass'y.
68	57-3589-1	#8-32 x 1/4" Bristol Hd. Set Screw
69	C-13.257-1	Flywheel
70	57-3589-1	#8-32 x 1/4" Bristol Hd. Set Screw
71	B-31.427	Record Lock Return Spring
72		Washer
73	B-35.1023	Record Lock Ass'y
74	C-35.835	Brake Slide Plate Ass'y.
75	B-35.1070	Brake Spring Ass'y (With Pad)
75A		Brake Spring Arm
76	B-35.1046-1	Shift Plate Ass'y.
77	B-33.412	Push-On Stud Nut, 3/16" Stud
78	B-31.339	Idler Lever Tension Spring
79	B-35.1051-1	Idler Lever Ass'y.
80	B-31.382	Spring Washer
81	B-32.275-1	#8-32 Hex Hd. Shouldered Screw
82		Spacer
83	B-28.163	Linen Washer
84	B-28.181	Idler Drive Belt
85	B-35.1066	Sheave Pulley Ass'y.
86		"E" Ring, 3/16" Shaft
87	B-35.1054-2	Drive Mtg. Plate Ass'y.
88	57-6C-805-1	#8-32 x 5/16" Phillips R. H. M. S.
89	C-35.1053	Motor Ass'y.
90	33.415	Speed Nut
91	73-2254-3	Felt Washer, 3/4" O.D. x 1/4" I.D. x 1/16"
92		Motor Fan
93	73-2254-3	Felt Washer, 3/4" O.D. x 1/4" I.D. x 1/16"
94	33.415	Speed Nut
95		Switch Lever Bracket.
96		#6-32 x 1/4" Phillips B. H. M. S.
97	B-35.1070	Brake Spring Ass'y (With Pad)
97A		Brake Spring Arm
98	57-3439	#6-32 x 3/16" Bristol Hd. Set Screw
99	B-35.1033	Switch Lever Ass'y.
100	B-35.1044	Sub-Idler Plate Ass'y.
101		Washer
102	B-32.275-1	#8-32 Hex Hd. Shouldered Screw
103	B-28.163	Linen Washer
104	B-33.405	Sub-Idler Wheel
105	B-28.163	Linen Washer
106	73-2254-6	Felt Washer
107		"E" Ring, 3/16" Shaft
108		Tape Counter
109		Tape Counter Drive Belt
110		Tape Counter Mtg. Bracket
111		Bracket Mtg. Screw
112	B-19.863	Drive Mtg. Plate Bracket
113	57-6C-805-1	#8-32 x 5/16" Phillips R. H. M. S.
114	B-28.163	Linen Washer
115	73-2248-39	Flat Washer, .425" O.D. x .255" I.D. x .070" Phenal

Ref. No.	Part No.	Description
116	B-35.1050-1	Brake Drum & Bushing Ass'y.
117	57-3589-1	#8-32 x 1/4" Bristol Hd. Set Screw
118		Shock Mount
119	48-2221	#10-32 Hex Nut (Elastic Stop Nut)
120	B-33.409	Hair Pin Clip
121	73-2241-150	Flat Washer, Blued Steel
122	B-33.408	Idler Wheel, 2 1/2" Dia.
123	B-28.163	Linen Washer
124	B-35.1064	Idler Slide Plate Ass'y
125	B-31.324	Idler Tension Spring
126	B-19.878	Speed Shift Lever

Ref. No.	Part No.	Description
127		Screw
128	B-33.407-1	"C" Washer
129		Idler Slide Bushing
130	B-35.1021-1	Speed Control Shaft Ass'y.
131	B-32.288	Motor Pulley
132	57-3589-1	#8-32 x 1/4" Bristol Hd. Set Screw
133	B-31.327	Idler Lift Compression Spring
134	B-33.407-1	"C" Washer
135	57-1C-603-2	#6-32 x 3/16" Phillips
136		Washer
137	B-19.961	Detent Spring
138	110-47	Idler Throwout Lever

PHOTOFACT* Folder

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MOPAR
MODEL 700 (TAR-58)

MOPAR
MODEL 700 (TAR-58)

TRADE NAME	Mopar Model 700 (TAR-58) For 1958 Dodge Trucks
MANUFACTURER	Philco Corp., Tioga & "C" Sts., Philadelphia, Pa.
TYPE SET	Battery Operated Custom Built AM Truck Receiver With Transistorized Output
TUBES (Four)	Types 12BL6 RF Amplifier, 12AD6 Converter, 12BL6 IF Amplifier, 12DL8 Det.-AVC-AF Amp.
POWER SUPPLY	12 Volt Storage Battery — RATING 1.5 Amp. @ 12.6 Volts DC
TUNING RANGE—BROADCAST	540-1605KC

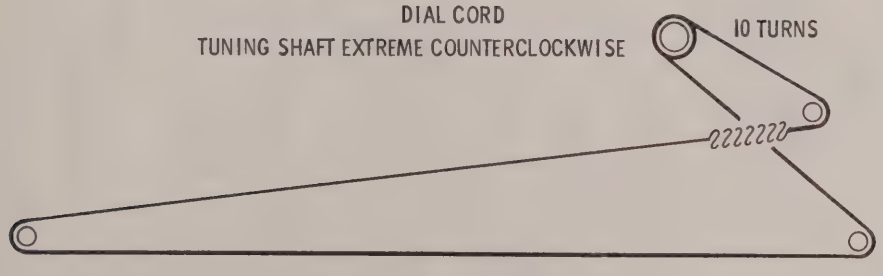
MOPAR
MODEL 700 (TAR-58)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.047mfd	High side to pin 7 (grid) of 12AD6 (V2). Low side to chassis.	262.5KC (400~ Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	25mmf	High side to antenna receptacle. Low side to chassis.	1605KC	"	"	A5, A6, A7	"



HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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SET 405 FOLDER 9

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amp.	12BL6	
V2	Converter	12AD6	
V3	IF Amp.	12BL6	
V4	Det. -AVC-AF Amp.	12DL8	

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	ARll	Output				ARll	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	PHILCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■500	16	61-0086-10	AFH3-54-50	B0045	WP200.7			R2665 *
B	▲200	16			BBR5-50	TC30			
C	5	25							

* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	100		30-1251-24	NPO-DI 100	DD-101	L10T1	ZT-531	5TCC-T1	10%
C3			31-6502-8						
C4	10		30-1251-8	BPD-00001	DD-100	L10Q1	UC-541	5GA-Q1	①
C5A									
B	100		31-6522-8						
C									
C6	33			BPD-000033	DD-330	L10Q33	UC-5433	5GA-Q33	②
C7	100		30-1251-22	N750-DI 100	DTN-100	C10T1U	NT-531	5TCU-T1	N750
C8	10000		30-1238-2	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C9	220		30-1238-4	BPD-00022	DD-221	L10T22	UC-5322	5GA-T22	
C10	100		30-1251-24	BPD-0001	DD-101	L10T1	UC-531	5GA-T1	
C11	.047	200	30-4671-45	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C12	4000		30-1238-18	BPD-004	DD-402	BYA10D4	UC-5240	5HK-D4	
C13	10000		30-1238-6	BPD-01	DD-103	BYA10S1	DC511	5HK-S1	
C14	300		30-1254-1						

① Some versions may use 5mmf (Part #31-6502-8).
② Some versions may use 3mmf (Part #30-1251-9).

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	PHILCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1meg	½	33-5580-20					Volume, Tap @ 300K
B	Switch							
R2	150Ω	2(WW)	33-5591-2					Transistor Bias

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

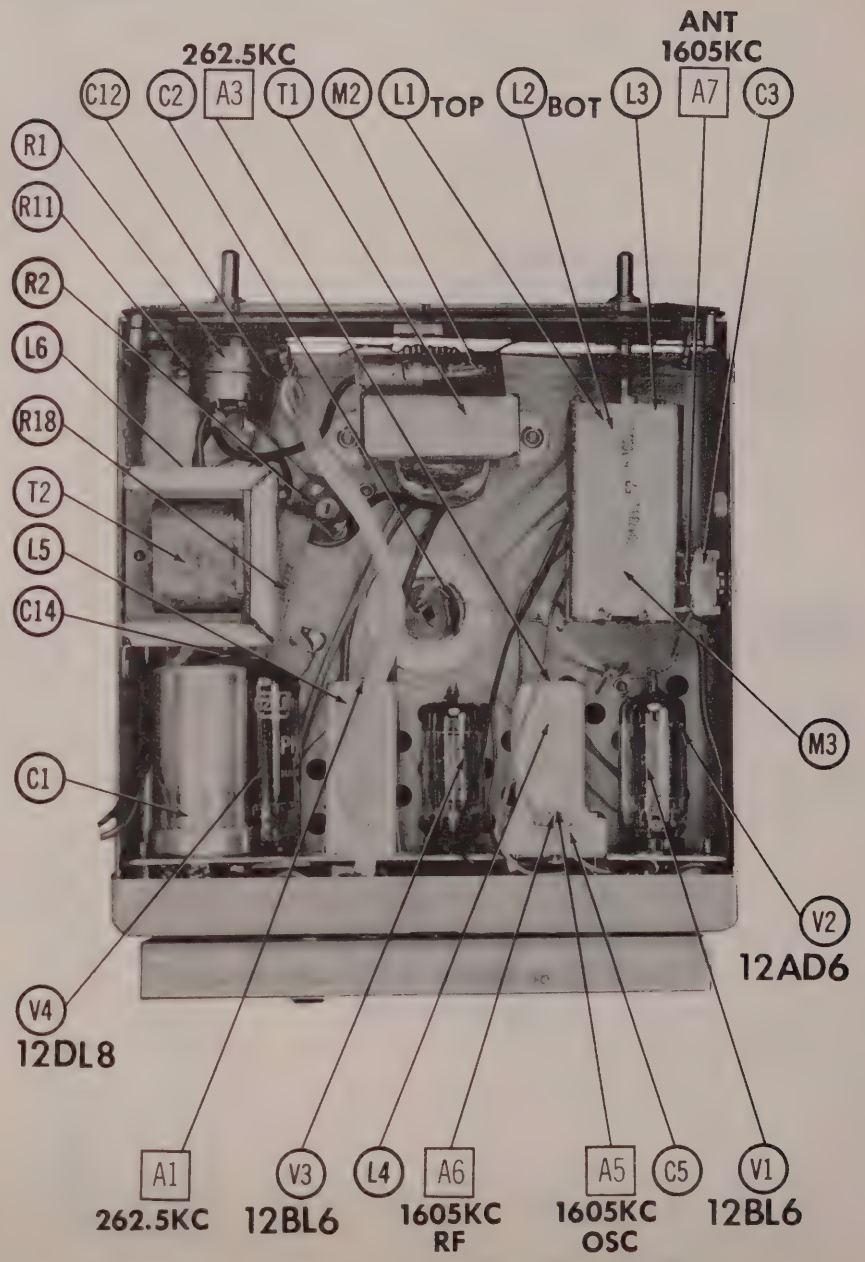
ITEM No.	RATING		PHILCO PART No.	NOTES
	OHMS	WATT		
R3	150K		66-4158340	
R4	1200Ω		66-2128340	
R5	1meg		66-5108340	
R6	4.7meg		66-5478340	
R7	47K		66-3478340	
R8	10meg		66-6108340	
R9	22meg		66-6228340	
R10	100K		66-4108340	
R11	150K		66-4158340	
R12	2.2meg		66-5228340	

① Temperature compensating unit.

ITEM No.	RATING		PHILCO PART No.	NOTES
	OHMS	WATT		
R13	1meg		66-5108340	
R14	1000Ω		66-2108340	
R15	100Ω		66-1108340	
R16	10meg		66-6108340	
R17	12Ω		66-0128340	
R18	150Ω	10	33-1367-3	① ②
R19	4700Ω			
R20	.47Ω		66-8274360	
R21	100Ω		66-1108340	

② Not used in some versions.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	PHILCO PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	9.5 :	1	32-8787-1						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	PHILCO PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	40.5Ω	3-4Ω	32-8833					TR59		

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	PHILCO PART No.	QUAM PART No.	
SP1	5"	PM	3-4Ω	36-1625-20	5A1	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		PHILCO PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Ant. Coil						Note 1
L2	RF Coil						Note 1
L3	Osc. Coil						Note 1
L4	Input IF	32-4676-6	16-6752	BC-350	12-H1	RF-3	
L5	Output IF	32-4677-6					
L6	"A" Lead Choke	32-4720-3					

Note 1. Part of M3.

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			PHILCO PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1		4A 32V	45-2656	41-4244-8				

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M2	Lamp	34-2031-10	#1892
M3	Tuner	76-10315-1	

CABINETS & CABINET PARTS

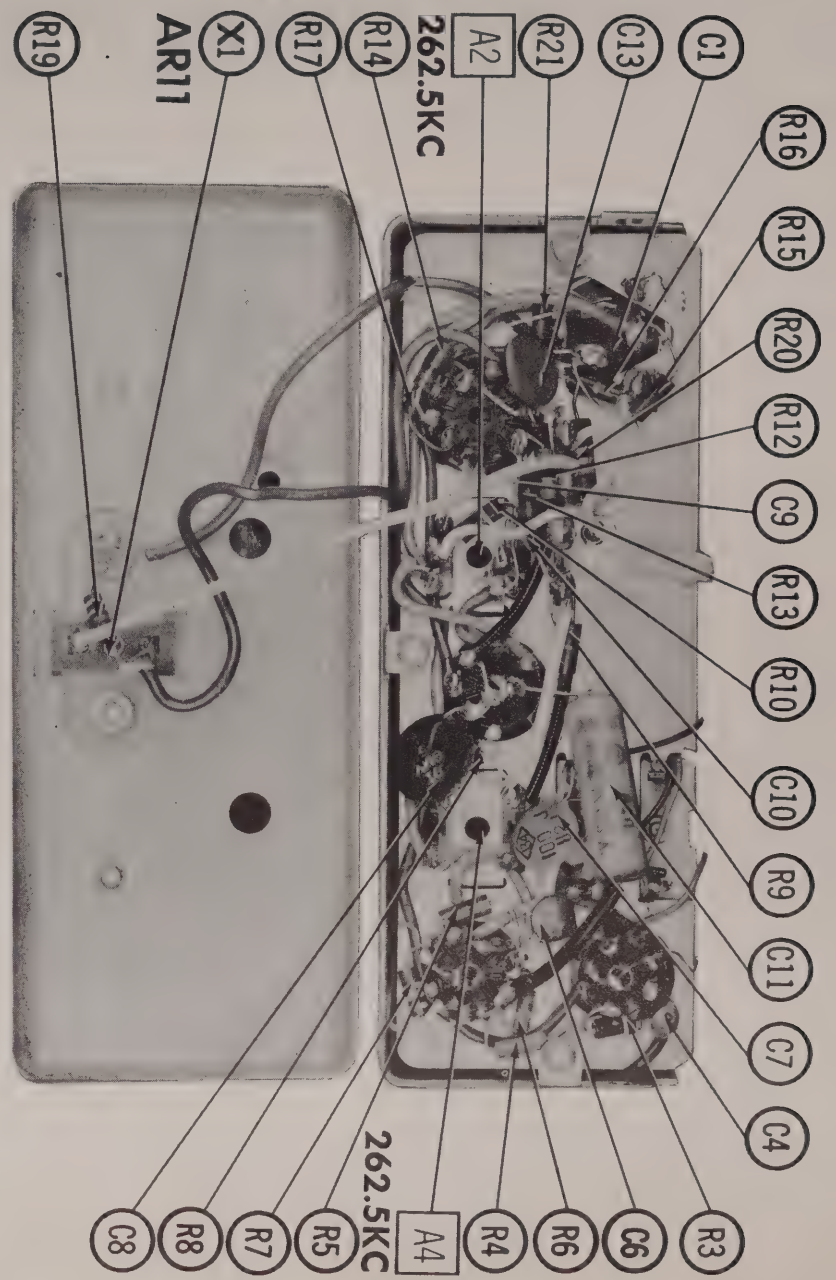
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

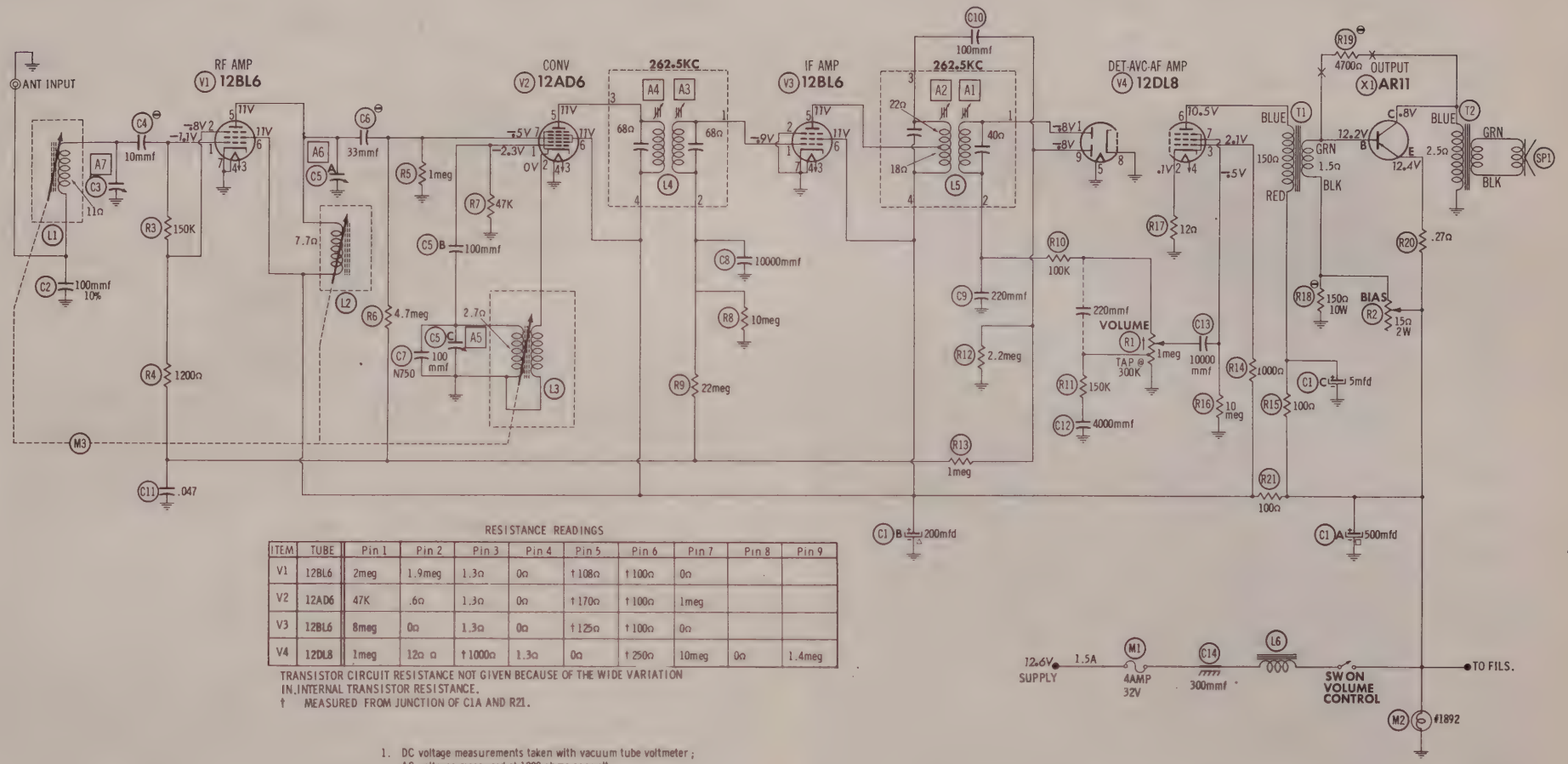
NAME	PART NO.	DESCRIPTION
Knob	27-4687-23	Tuning & Volume
Pointer	56-4362-11	
Dial Scale	54-5329	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire ..... Use BELDEN No. 8885
Bonding Strap ..... Use BELDEN No. 8661

CHASSIS—BOTTOM VIEW





RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12BL6	2meg	1.9meg	1.3Ω	0Ω	†108Ω	†100Ω	0Ω		
V2	12AD6	47K	.6Ω	1.3Ω	0Ω	†170Ω	†100Ω	1meg		
V3	12BL6	8meg	0Ω	1.3Ω	0Ω	†125Ω	†100Ω	0Ω		
V4	12DL8	1meg	12Ω Ω	†1000Ω	1.3Ω	0Ω	†250Ω	10meg	0Ω	1.4meg

TRANSISTOR CIRCUIT RESISTANCE NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.
† MEASURED FROM JUNCTION OF C1A AND R21.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

TRANSISTOR BIAS ADJUSTMENT (R2)

The bias control should be adjusted if the transistor is replaced.
1. Set R2 to mid-range.
2. Connect a low range DC voltmeter (not on VTVM) across the output transformer (T2).
3. Apply 13.2 volts DC to the receiver and allow a 15 minute warm-up period.
4. Adjust R2 for a meter reading of .85 volts. This is equivalent to a collector current of 300MA.

SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

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EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

MOTOROLA MODELS 5T21W-1, 5T22M-1, 5T22W-1, 5T22Y-1, 5T23N-1, 5T23P-1, 5T23W-1, 5T23Y-1 (Ch. HS-625, HS-627)

TRADE NAME	Motorola Models 5T21W-1, 5T22M-1, 5T22R-1, 5T22W-1 (Ch. HS-625); 5T22Y-1, 5T23N-1, 5T23P-1, 5T23W-1, 5T23Y-1 (Ch. HS-627)
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois
TYPE SET	AC-DC Operated AM Receiver
TUBES (Five)	Types 12BE6 Converter, 12BA6 IF Amplifier, 12AV6 Det.-AVC-AF Amp., 50C5 Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-DC
RATING	28 Amp. @ 117 Volts AC (31 Watts)
TUNING RANGE—BROADCAST	535 - 1620KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS--READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to pin 7 (grid) of 12BE6 (V1). Low side to B-.	455KC (400~ Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	"	"	1620KC	"	"	A5	"
3.		Loop	600KC	Tune to 600KC signal	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output with chassis installed in cabinet.

MOTOROLA MODELS 5T21W-1, 5T22M-1, 5T22W-1, 5T22Y-1, 5T23N-1, 5T23P-1, 5T23W-1, 5T23Y-1 (Ch. HS-625, HS-627)

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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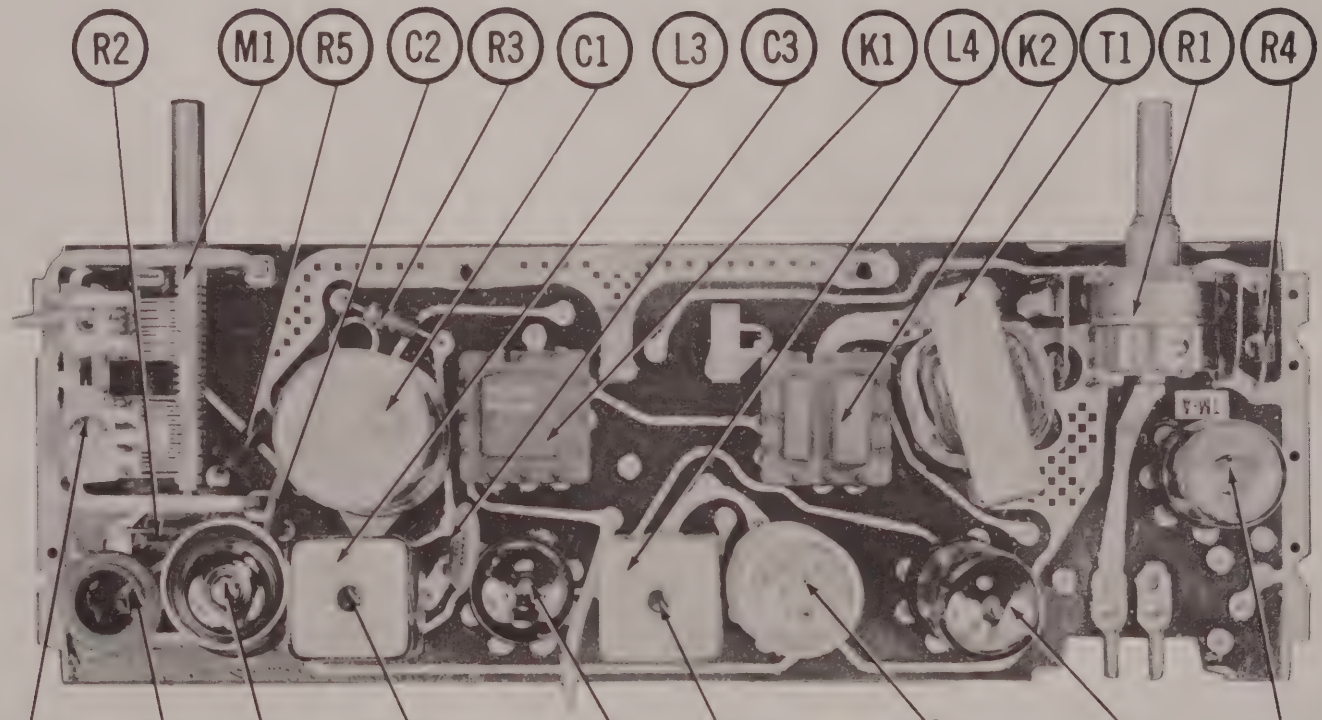


CHASSIS TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	12BE6	
V2	IF Amplifier	12BA6	
V3	Det.-AVC-AF Amp.	12AV6	
V4	Output	50C5	
V5	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■40	150	23B639496	PR4-125	BBRT44415	PFP311. 63	TDLT-5	FMT-1540	R2644 *
B	▲40	150							
C	30	150							

* Non Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	150		21K127652	N750-DI 150	DTN-150	C10T15U		5TCU-T15	N750
C3	10000		21B533471	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	1meg	½	18K635823					Volume & Switch (Note 1)

Note 1. Part #18B637639 is used in 5T23-1 Series

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	MOTOROLA PART No.	NOTES
R2	1meg		6K122324	
R3	27K		6K121300	
R4	100K		6K122313	
R5	100Ω		6K119402	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2400Ω	3-4Ω	25B632025		A-3025①		A-3332 ①		S-12X ①	①Use original channel frame

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA MOTOROLA PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	50C635807 ①	4A07	① Alternate Part #50K637637

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA MOTOROLA PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Loop Stick	1V637763					5T21-1 Series ①
	Loop Stick	1V637799					5T22-1 Series ①
	Loop Stick	1V637874					5T23-1 Series ①
L2	Osc. Coil	24B637228					
L3	Input IF	24K636016	16-6780	BC-356	13-PC9	RF-4	
L4	Output IF	24K636017	16-6780	BC-357	13-PC10	RF-4	

① Includes Cabinet Back and Line Cord.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	MOTOROLA PART No.	REPLACEMENT DATA
K1	AVC-AF Amp. Net.	4700mmf, 220mmf, 47000mmf, 330mmf, 8. 2meg, 22K, 120Ω, 2. 2meg	51C637000	
K2	Audio Coup. Net.	4700mmf, 33000mmf, 20000mmf, 470K, 470K, 150Ω, 1200Ω	51K637001	

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M1	Tuning Cap.	19K637004	2 Gang, (Ant. 20-224mmf) 5T21-1 & 5T22-1 Series
	Tuning Cap.	19K639361	2 Gang, 5T23-1 Series
	Printed Board	84B639363	Less all components (specify letter suffix)

CABINETS & CABINET PARTS

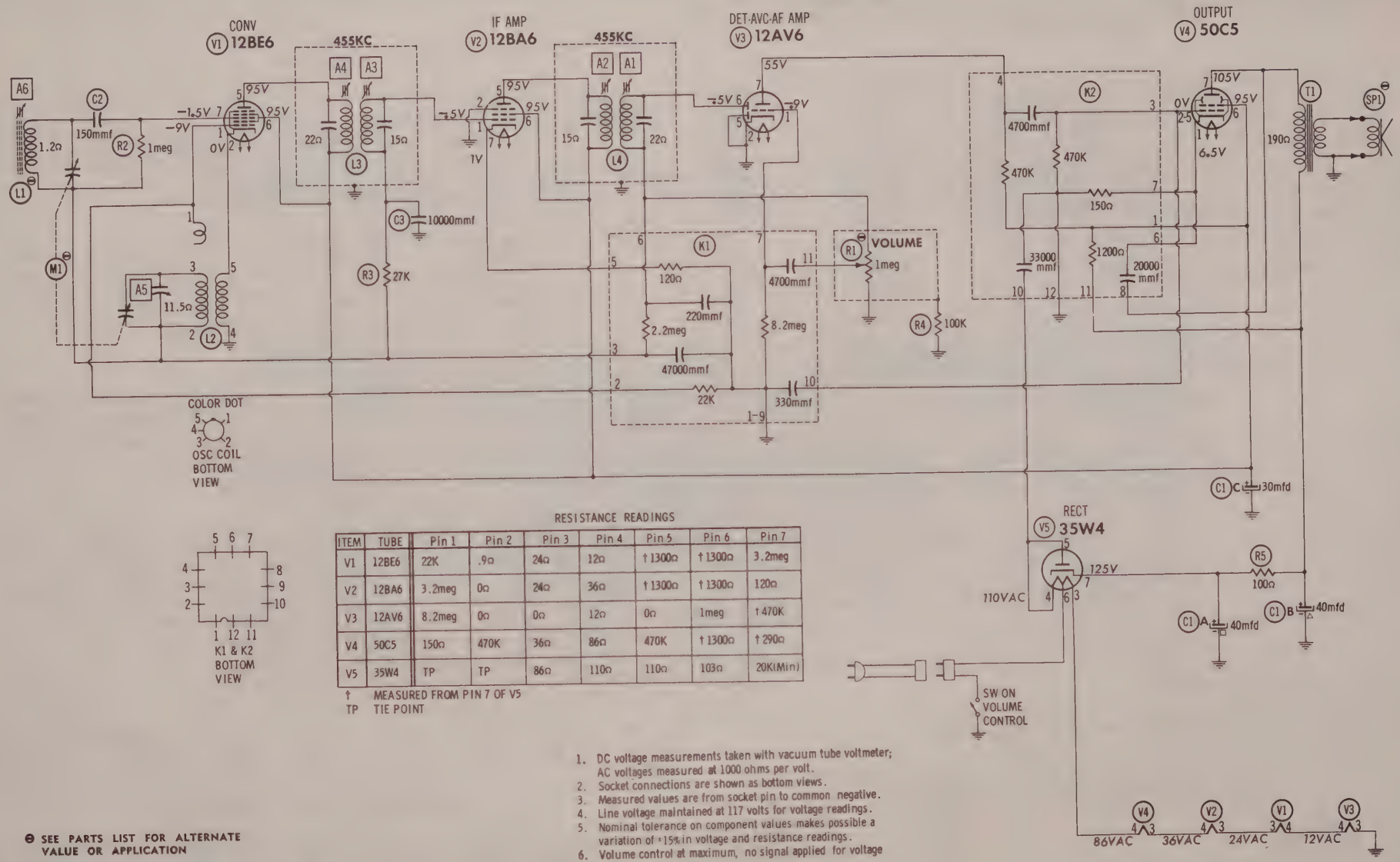
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	36C637625	Dial Scale, Clear; 5T23-1 Series
Knob	36C637477	Tuning, Gray; Model 5T21W-1
Knob	36K637604	Tuning, Antique White; Model 5T22M-1
Knob	36B637603	Tuning, Charcoal; Models 5T22R-1, 5T22Y-1, 5T22W-1
Knob	36B637626	Tuning, Antique White; Models 5T23N-1, 5T23P-1, 5T23W-1, 5T23Y-1
Knob	36K637478	Volume, Gray, Model 5T21W-1
Knob	36K637607	Volume, Antique White; Model 5T22M-1
Knob	36B637605	Volume, Charcoal; Models 5T22R-1, 5T22W-1, 5T22Y-1
Knob	36K637606	Volume, Clear; Models 5T23N-1, 5T23P-1, 5T23W-1, 5T23Y-1
Cabinet	1V637773	Antique White, Model 5T21W-1
Cabinet	1V637801	Mahogany, Model 5T22M-1
Cabinet	1V637802	Red, Model 5T22R-1
Cabinet	1V637804	Antique White, Model 5T22W-1
Cabinet	1V637803	Yellow, Model 5T22Y-1
Cabinet	1V637892	Mocha, Model 5T23N-1
Cabinet	1V637893	Pink, Model 5T23P-1
Cabinet	1V637894	Antique White, Model 5T23W-1
Cabinet	1V637891	Yellow, Model 5T23Y-1
Scale	64B637627	Dial, Models 5T22R-1, 5T22W-1, 5T22Y-1

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord (Interlock Type) ..... Use BELDEN No. 8874



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	.9Ω	24Ω	12Ω	†1300Ω	†1300Ω	3.2meg
V2	12BA6	3.2meg	0Ω	24Ω	36Ω	†1300Ω	†1300Ω	120Ω
V3	12AV6	8.2meg	0Ω	0Ω	12Ω	0Ω	1meg	†470K
V4	50C5	150Ω	470K	36Ω	86Ω	470K	†1300Ω	†290Ω
V5	35W4	TP	TP	86Ω	110Ω	110Ω	103Ω	20K(Min)

† MEASURED FROM PIN 7 OF V5
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

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EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

OLYMPIC
MODELS 407, 408

OLYMPIC
MODELS 407, 408

OLYMPIC
MODELS 407, 408

TRADE NAME	Olympic Models 407, 408
MANUFACTURER	Olympic Radio & Tel. Corp., 34-01 38th Ave., Long Island City 1, N.Y.
TYPE SET	AC Operated AM Receiver (Model 408 has Electric Clock)
TUBES (Four)	Types 12AU6 Converter, 12AV6 Det.-AVC-AF Amp., 50C5 Output, 35W4 Rectifier
POWER SUPPLY	105-125 Volts AC-60 Cycles — RATING .27 Amp. @117 Volts AC (26 Watts)
TUNING RANGE—BROADCAST	535KC - 1625KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator and B—. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to Ant. stator lug tuning gang. Low side to B—	455KC (400~ Mod)	Tuning gang fully open.	Across Voice Coil	A1, A2	Adjust for maximum output.
2.		Loop	1620KC	"	"	A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1500KC	Tune for 1500KC signal	"	A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Repeat Steps 2 & 3.

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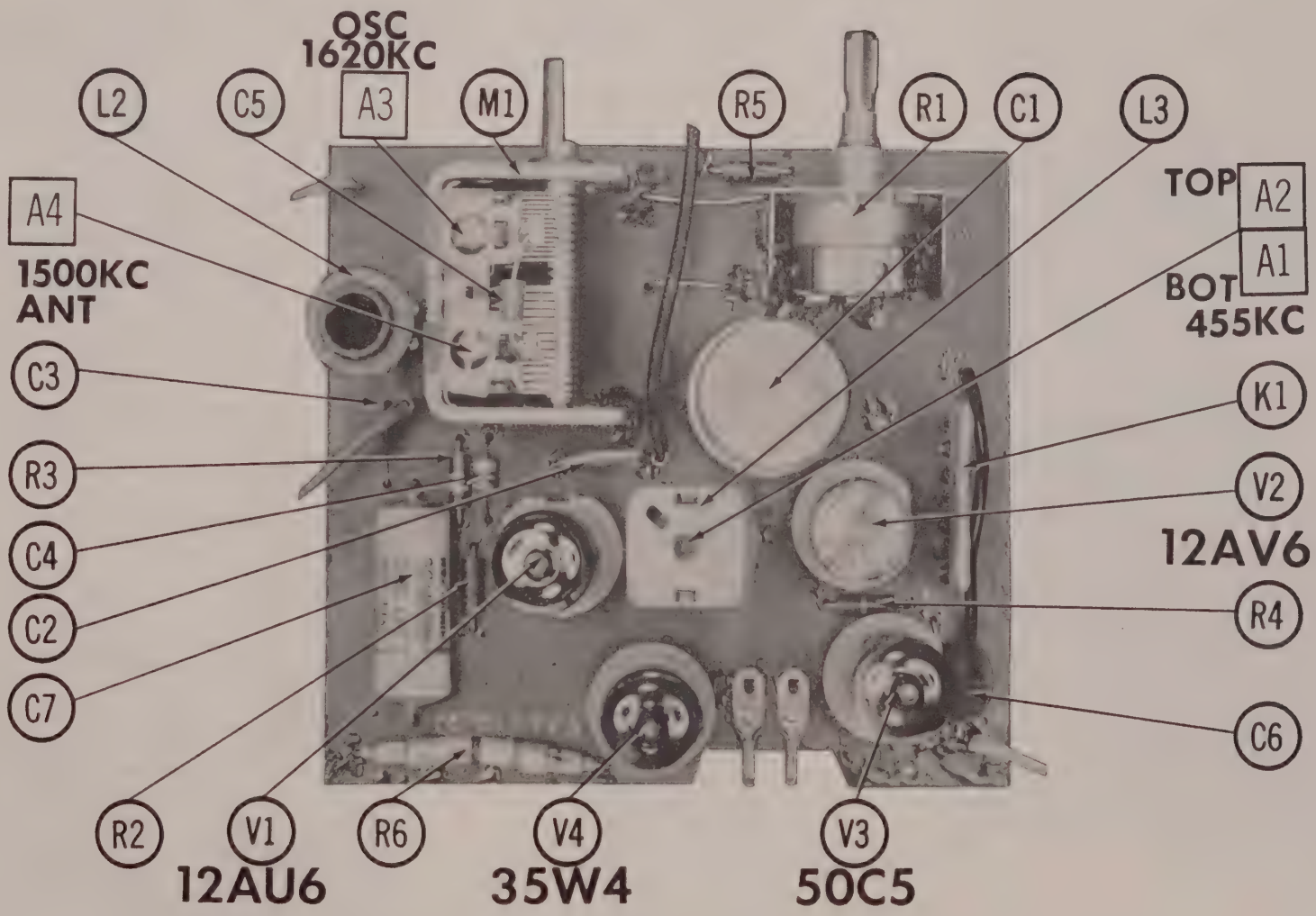


CHASSIS-TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	12AU6	
V2	Det. -AVC-AF Amp.	12AV6	

ITEM No.	USE	TYPE	NOTES
V3	Output	50C5	
V4	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	Olympic PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■40	150	C04391	PRS150/25V 4020/20	BBRT4415C	TCT3114	TDLT-12	FMT-321	R2565*
B	▲20	150							
C	20	25							

*Non Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	Olympic PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C2	10000		CCD103X	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C3	47		CCD470M	BPD-000047	DD-470	L10Q47	UC-5447	5GA-Q47	
C4	2.2		C01112	NP0-S12.2	TCZ-2R2	C10V22C		5TCCB-V22	
C5	.68		C04322		TCZ-R68				
C6	10000		CCD103M	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C7	.047	400	C0-B-4473	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	Olympic PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	2meg	½	PT4397					Volume & Switch Note 1

Note. 1. Part #PT4390 used in Model 408

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	Olympic PART No.	NOTES
R2	2.2meg		REB225M	
R3	10K		REB103K	
R4	150Ω		REB151M	

ITEM No.	RATING OHMS	RATING WATT	Olympic PART No.	NOTES
R5	6800Ω		REB682K	
R6	15Ω	2	RE4393	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	Olympic PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2400Ω	3-4Ω	Part of SP1	Z1101	A-3025	AU-605	A-3332	24S53	S-12X	

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA Olympic PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	SK4396①	4A07	①Includes T1

COILS (RF-IF)

ITEM No.	USE	Olympic PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Loop Ant.	LP4398					Includes cabinet back-Model 407
	Loop Ant.	LP4841					Includes cabinet back—Model 408
L2	Osc. Coil	CL4291					Model 408
	Osc. Coil	CL4292					Model 407
L3	IF Trans.	TR4392					

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	Olympic PART No.	REPLACEMENT DATA	
K1	Audio Coup. Net.	2000mmf, 220mmf, 5000mmf 250mmf, 470K, 470K, 6.8meg	PC4388	Aerovox Centralab Sprague	PA-511 PCT-157 DT-4

MISCELLANEOUS

ITEM No.	PART NAME	Olympic PART No.	NOTES
M1	Tuning Cap.	CV4389	
	Printed Board	CS4399	Run #1
	Printed Board	CS4399-1	Run #2
	Clock	PP4822	Model 408

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	KN4794	Tuning
Knob	KN4795	On-Off-Volume
Knob	KN5000	Clock, Model 408
Cabinet	CA4797	Model 407
Cabinet	CA4798	Model 408

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

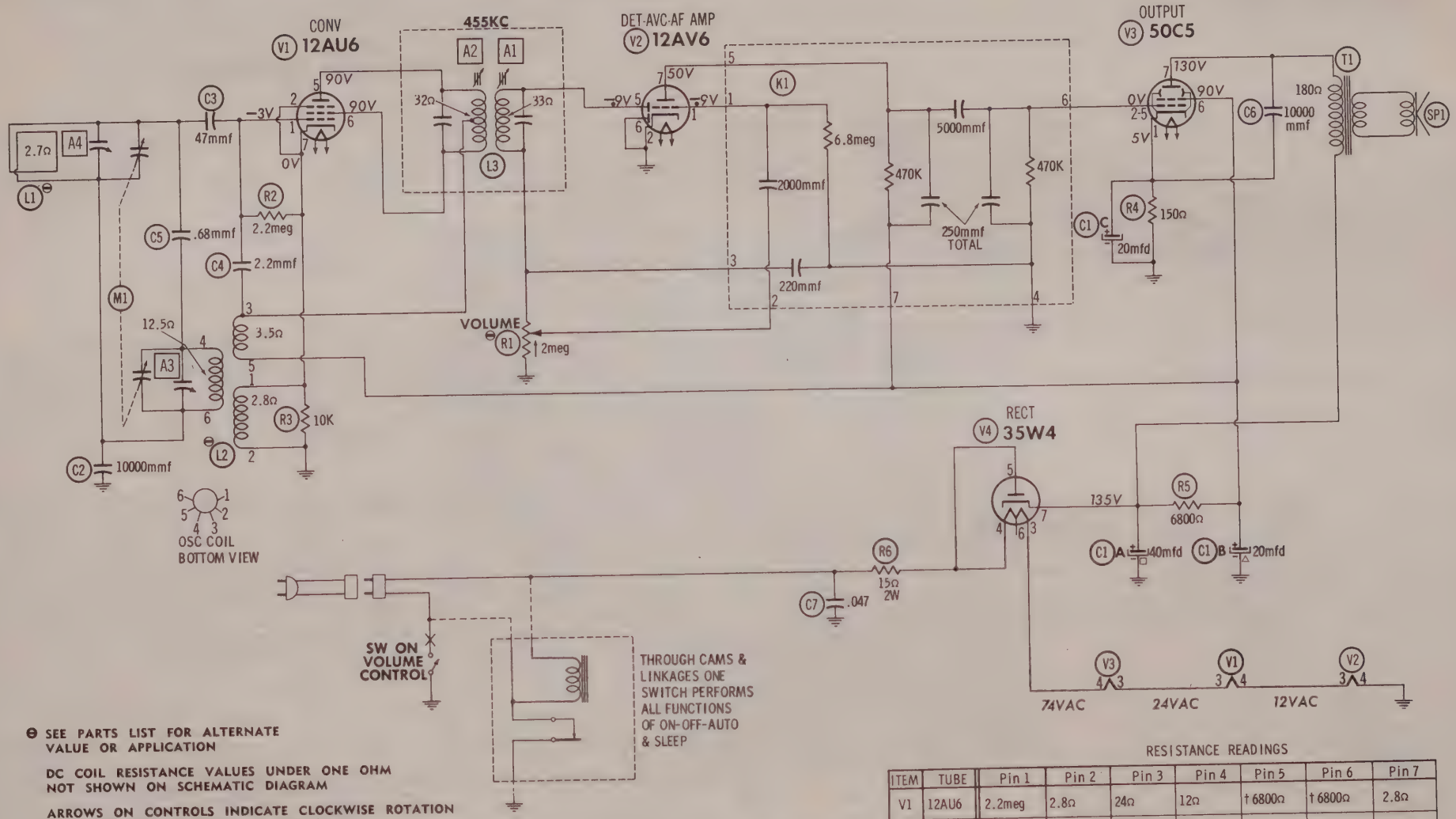
Power Cord (Interlock Type) ..... Use BELDEN No. 8874

SET 405 FOLDER 11

FOLDER 11

OLYMPIC MODEL 407

OLYMPIC MODEL 407



Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12AU6	2.2meg	2.8Ω	24Ω	12Ω	†6800Ω	†6800Ω	2.8Ω
V2	12AV6	6.8meg	0Ω	12Ω	0Ω	2meg	0Ω	†470K
V3	50C5	150Ω	470K	24Ω	74Ω	470K	†6800Ω	†180Ω
V4	35W4	TP	TP	74Ω	110Ω	110Ω	100Ω	20K(MIN)

† MEASURED FROM PIN 7 OF V4
TP TIE POINT

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

RCA VICTOR MODELS SHF2 (Ch. RC-1180A, RS-147E)

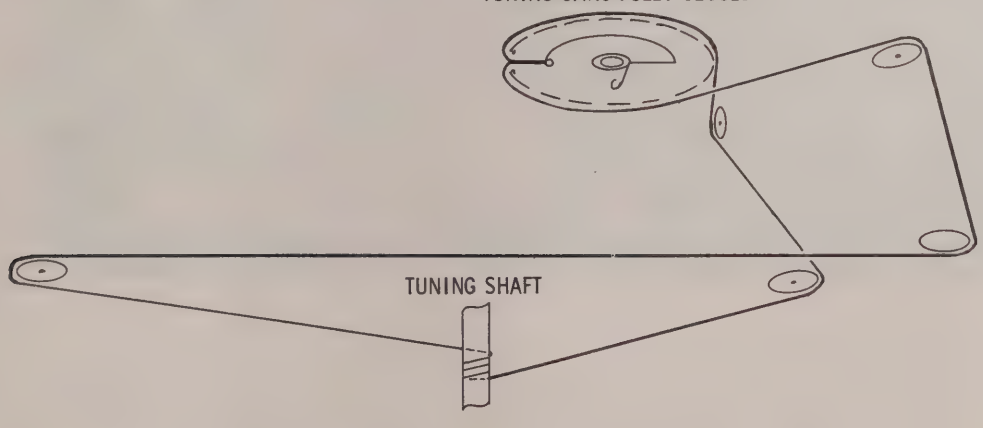
RCA VICTOR MODELS SHF2 (Ch. RC-1180A, RS-147E)

RCA VICTOR MODELS SHF2 (Ch. RC-1180A, RS-147E)

TRADE NAME	RCA Victor Model SHF-2 (Ch. RC-1180A, Tuner; Ch. RS-147E, Amp.)		
MANUFACTURER	RCA Victor Radio & "Victrola" Div., Radio Corp of America, Camden 8, N. J.		
TYPE SET	AC Operated FM-AM Receiver With 4 Speed Automatic Record Changer		
TUBES	Seventeen (Plus Phono Preamp. Transistor)		
POWER SUPPLY	110-120 Volts AC-60 Cycles	RATING	1.5 Amp. @ 117 Volts AC (165 Watts Less Phono Motor)
TUNING RANGE—BROADCAST	540 - 1600KC	FREQ. MOD.	88-108MC

FOR SERVICE INFORMATION OF RECORD CHANGER RP-205C-1 — SEE RCA RP-205 SERIES — PHOTOFACT SET 358 FOLDER 10

TUNING GANG FULLY CLOSED



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The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America

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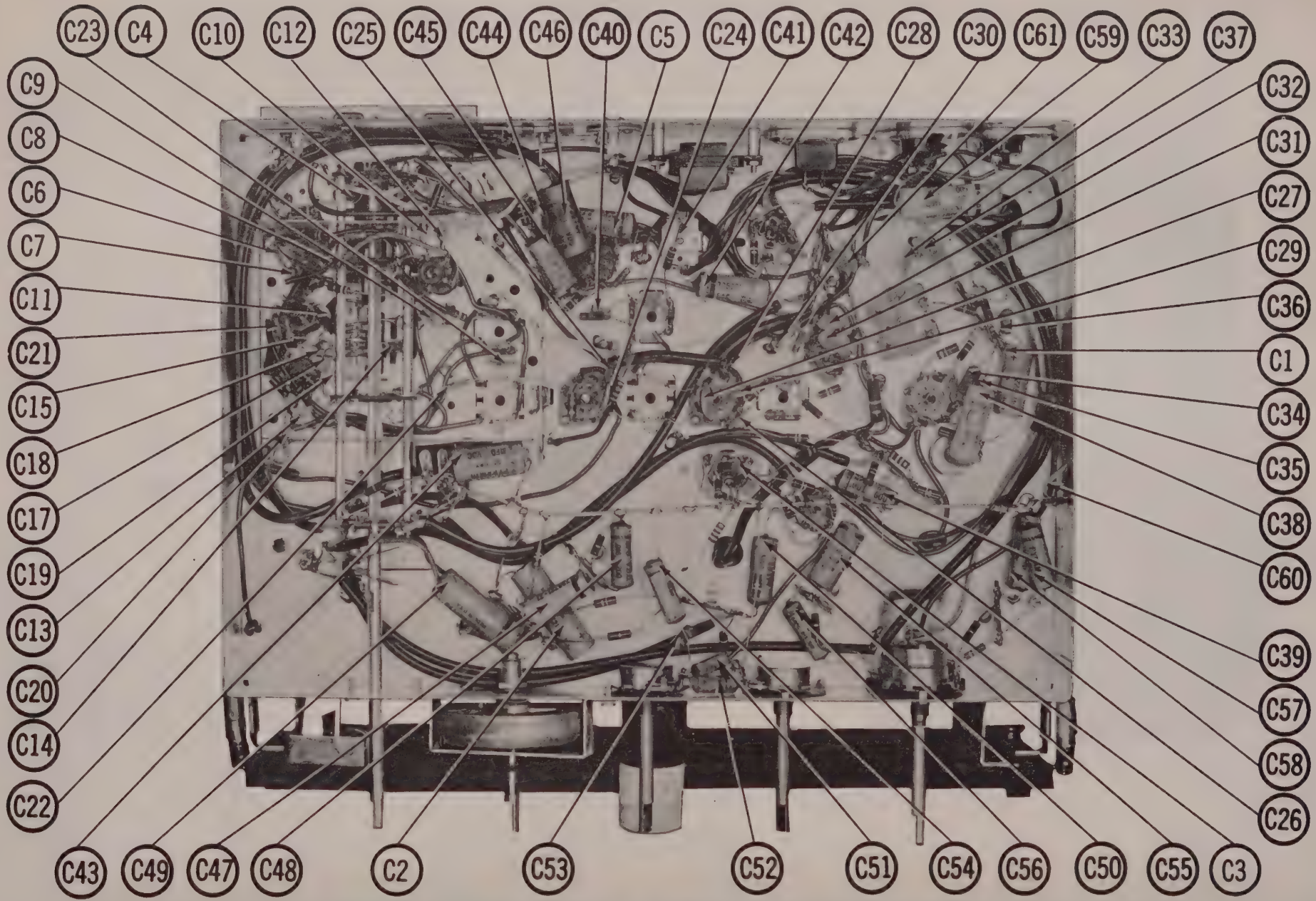
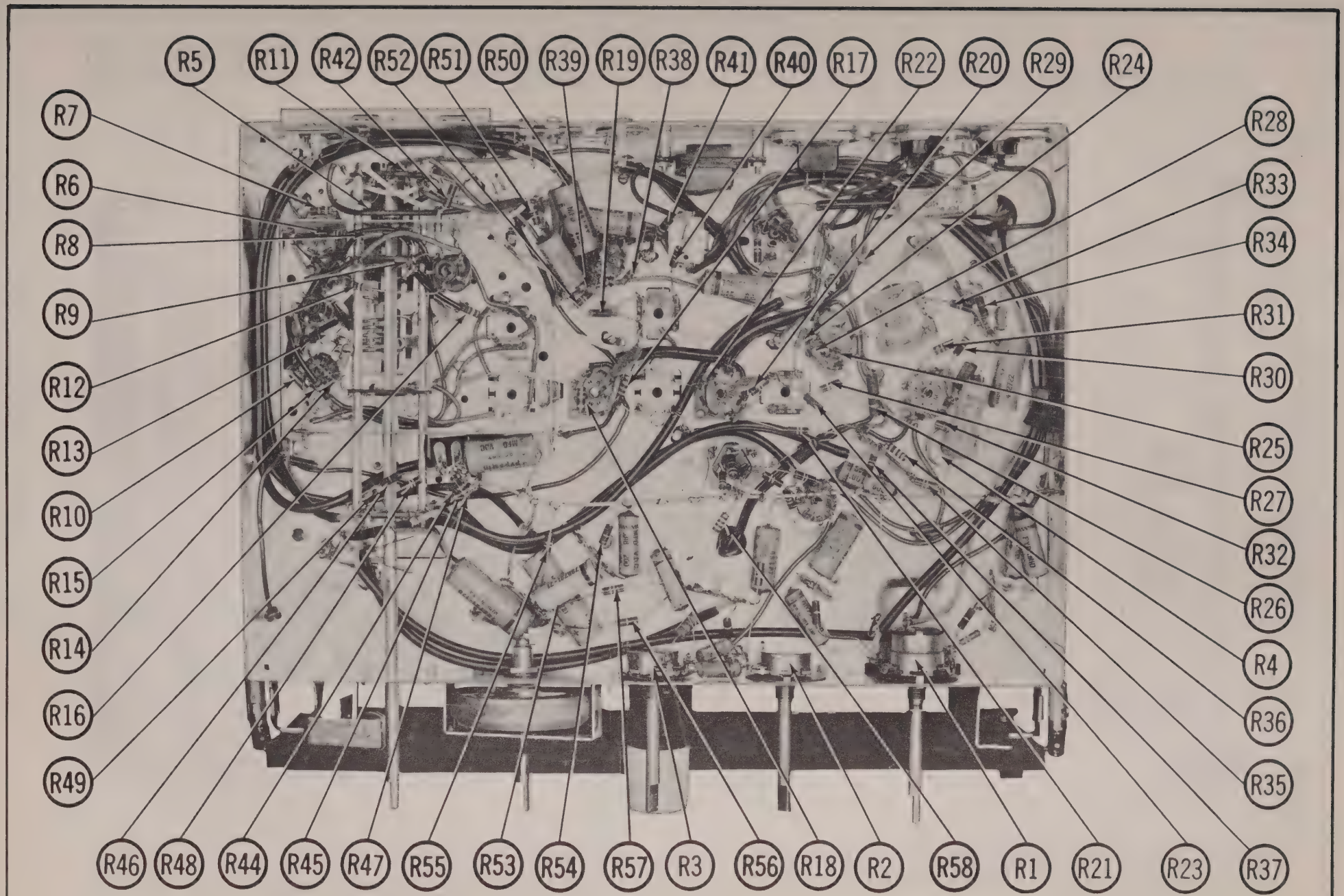
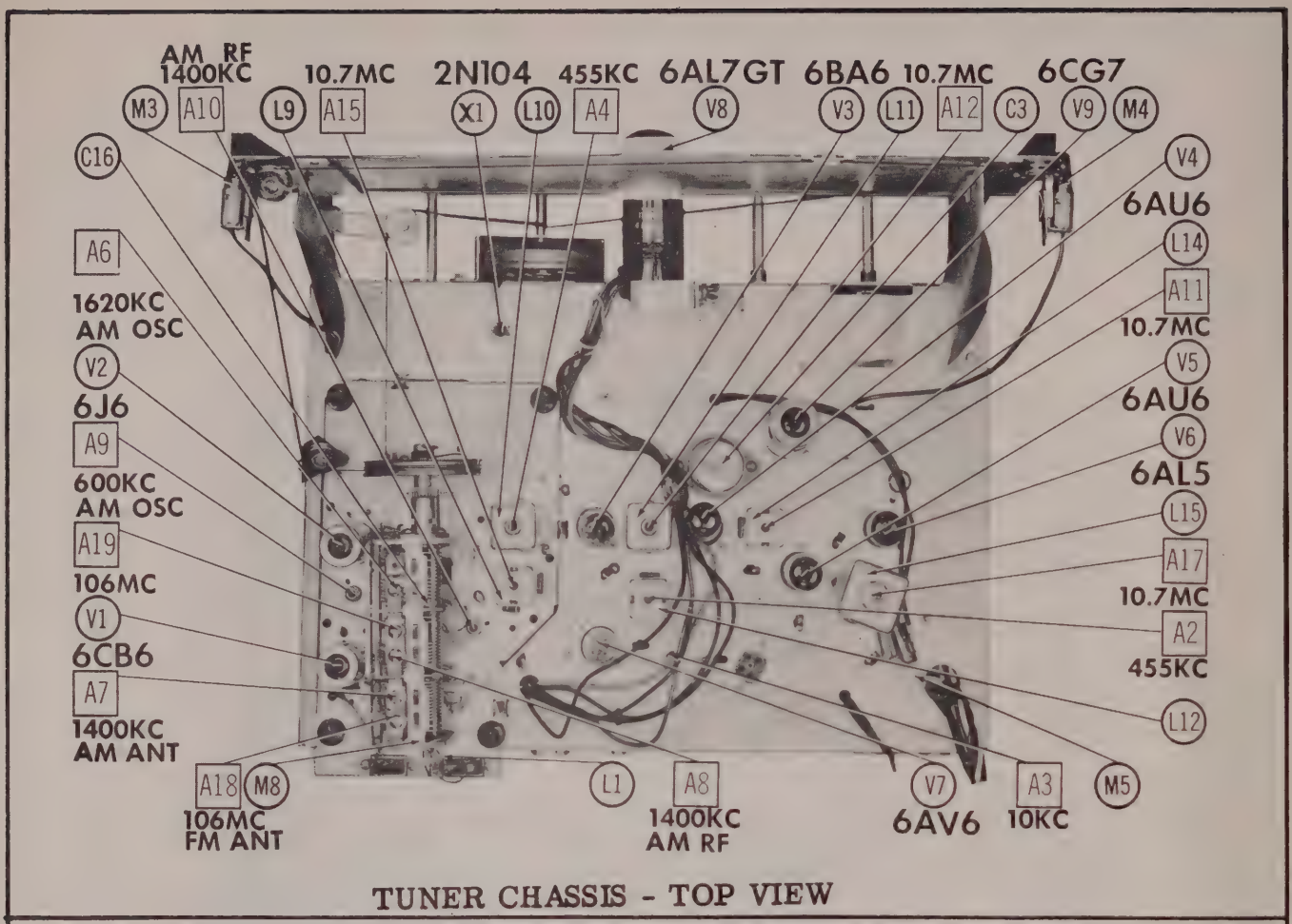


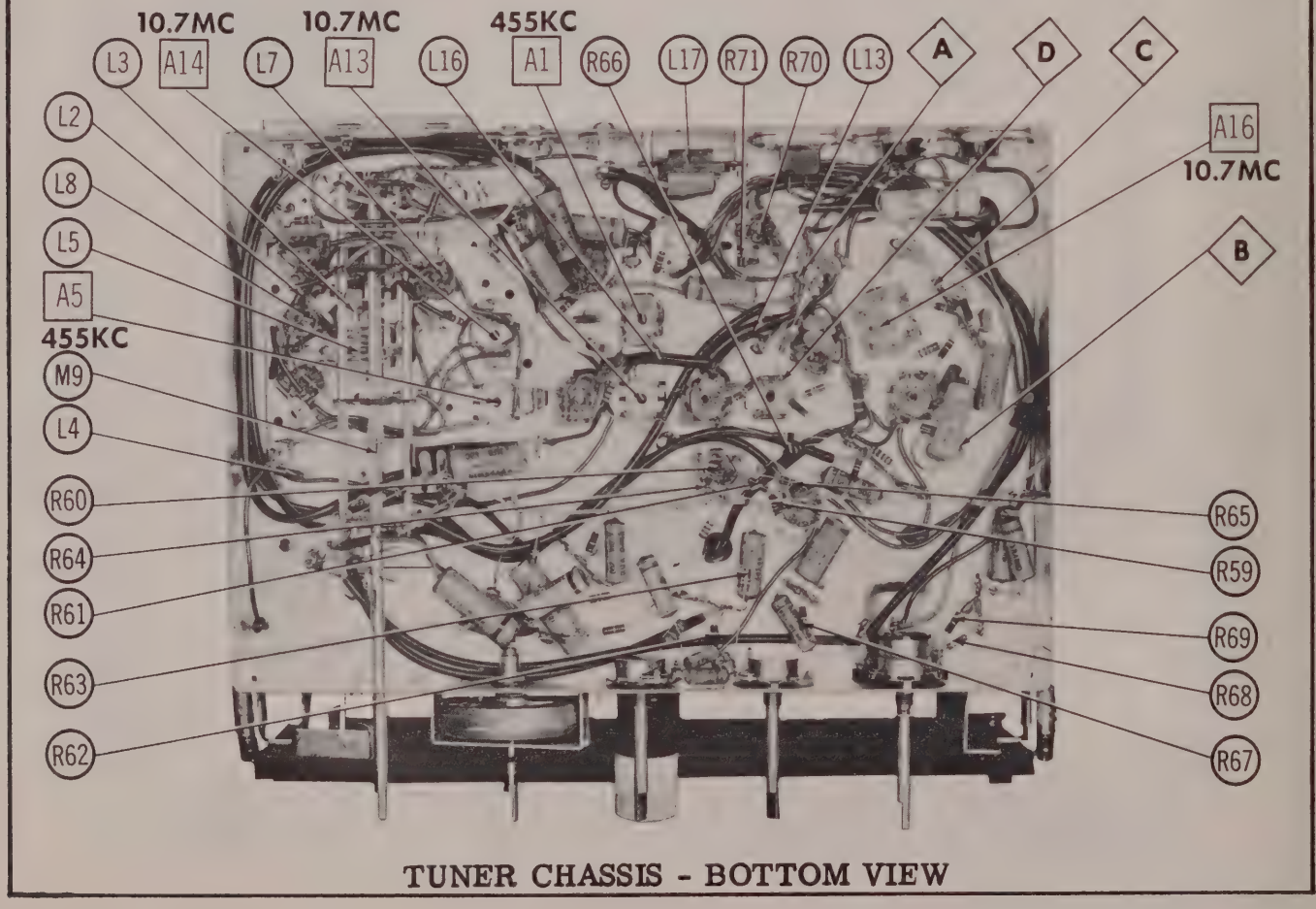
TUNER CHASSIS BOTTOM VIEW - CAPACITOR IDENT.



TUNER CHASSIS BOTTOM VIEW - RESISTOR IDENT. (R1 THRU R58)



TUNER CHASSIS - TOP VIEW



TUNER CHASSIS - BOTTOM VIEW

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01mfd	High side to pin 1 (grid) of 6BA6 (V3). Low side to chassis.	455KC (400∿ Mod)	AM	Tuning gang fully open	Across voice coil	A1, A2	Adjust for maximum output.
2.	"	"	455KC (10KC Mod)	"	"	"	A3	Adjust for MINIMUM output.
3.	"	High side to terminal #4 of AM RF Coil (L7). Low side to chassis.	455KC (400∿ Mod)	"	"	"	A4, A5	Adjust for maximum output. Parallel primary with 1000Ω resistor while adjusting A4. Parallel secondary with 1000Ω resistor while adjusting A5.
4.		Loop	1620KC	"	"	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
5.		"	1400KC	"	Tune to 1400KC signal	"	A7, A8	"
6.		"	600KC	"	Tune to 600KC signal	"	A9, A10	Fashion loop of several turns of wire and radiate signal into loop of receiver. Parallel A8 with 10K resistor while adjusting A9. Repeat steps 4, 5 and 6.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	.01mfd (Ceramic)	High side to pin 1 (grid) of 6BA6 (V3). Low side to chassis.	10.7MC (Unmod)	FM	Point of non-interference	DC probe to point (A). Low side to chassis.	A11, A12, A13	Adjust for maximum deflection. Parallel L11 primary with 270Ω resistor while adjusting A12. Parallel secondary with 270Ω resistor while adjusting A13.
8.	"	High side to FM RF stator lug of tuning gang. Low side to chassis.	"	"	"	"	A14, A15	Adjust for maximum deflection.
9.		High side to pin 1 (grid) of 6AU6 (V5). Low side to chassis.	"	"	"	DC probe to point (B). Low side to chassis.	A16	Set R4 to its mid range position. Adjust A16 for maximum deflection.
10.		"	"	"	"	DC probe to point (C). Low side to chassis.	A17	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
7.		High side to FM antenna lead. Low side to chassis.	10.7MC (450KC Swp)	FM	Point of non-interference	Vert. Amp. to point (D). Low side to chassis.	A11	Disconnect C30. Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
8.		"	"	"	"	"	A12, A13	Adjust for curve of maximum amplitude and symmetry similar to Fig. 1.
9.		"	"	"	"	"	A14, A15	Adjust for curve of maximum amplitude and symmetry similar to Fig. 1. Reconnect C30.
10.		"	"	"	"	Vert. Amp. to point (C). Common to chassis.	A16, A17	Set R4 to its mid range position. Adjust A17 so that 10.7MC occurs at center of crossover lines similar to Fig. 2. Adjust A16 for maximum amplitude and straightness of crossover lines.

RATIO DETECTOR BALANCE

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
11.		High side to pin 1 (grid) of 6AU6 (V5). Low side to chassis.	10.7MC (400∿ Mod)	FM	Point of non-interference	DC probe to point (C). Common to chassis.	R4	Adjust for MINIMUM deflection.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
12.	Two 120Ω Carbon Resistors	Across FM antenna terminals with 120Ω in each lead.	90MC (Unmod)	FM	90MC	DC probe to point (A). Common to chassis.	L5	Adjust for maximum deflection by compressing or expanding coil turns.
13.	"	"	106MC	"	106MC	"	A18, A19	Adjust for maximum deflection.
14.	"	"	90MC	"	90MC	"	L1, L3	Adjust for maximum deflection by compressing or expanding coil turns. Repeat steps 13 and 14.

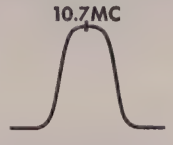


FIG. 1

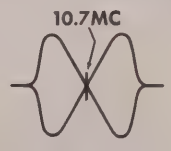
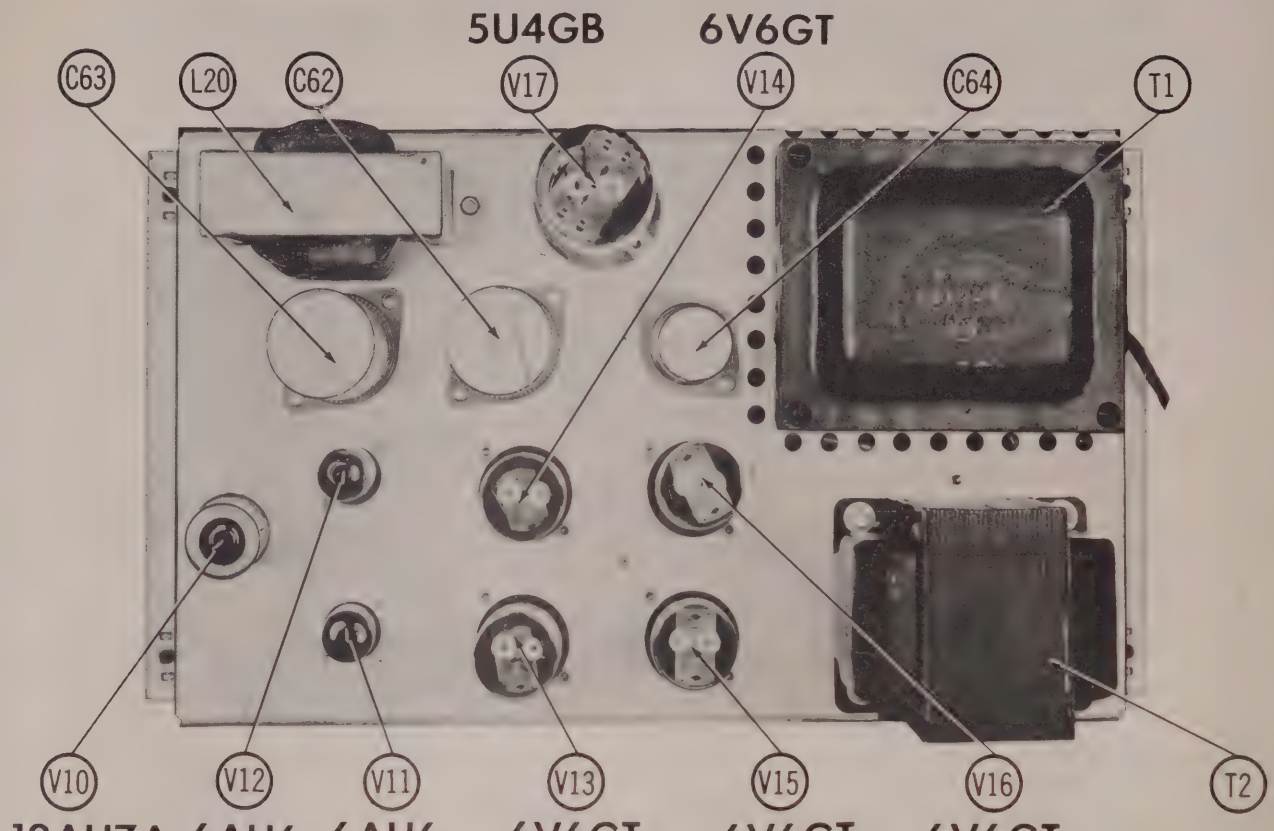
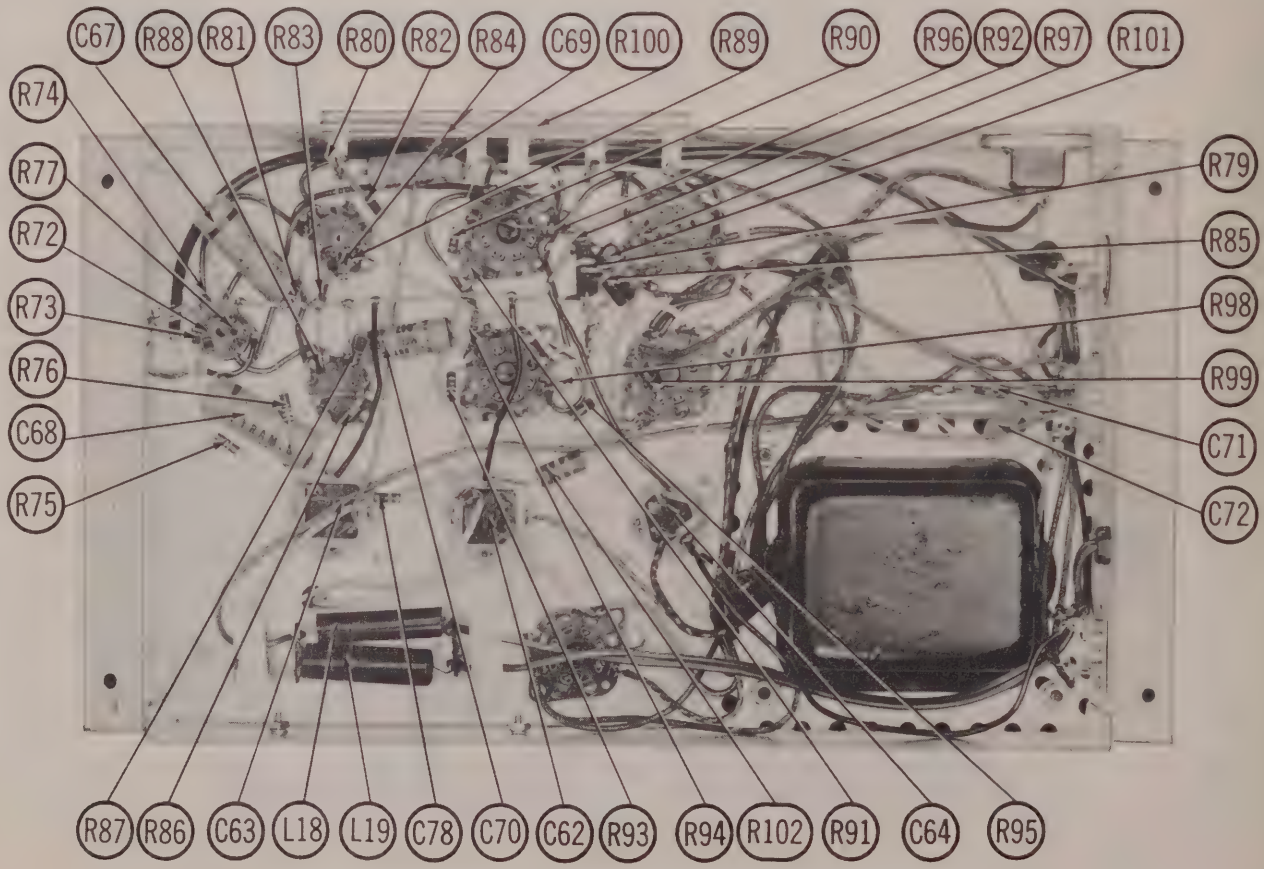


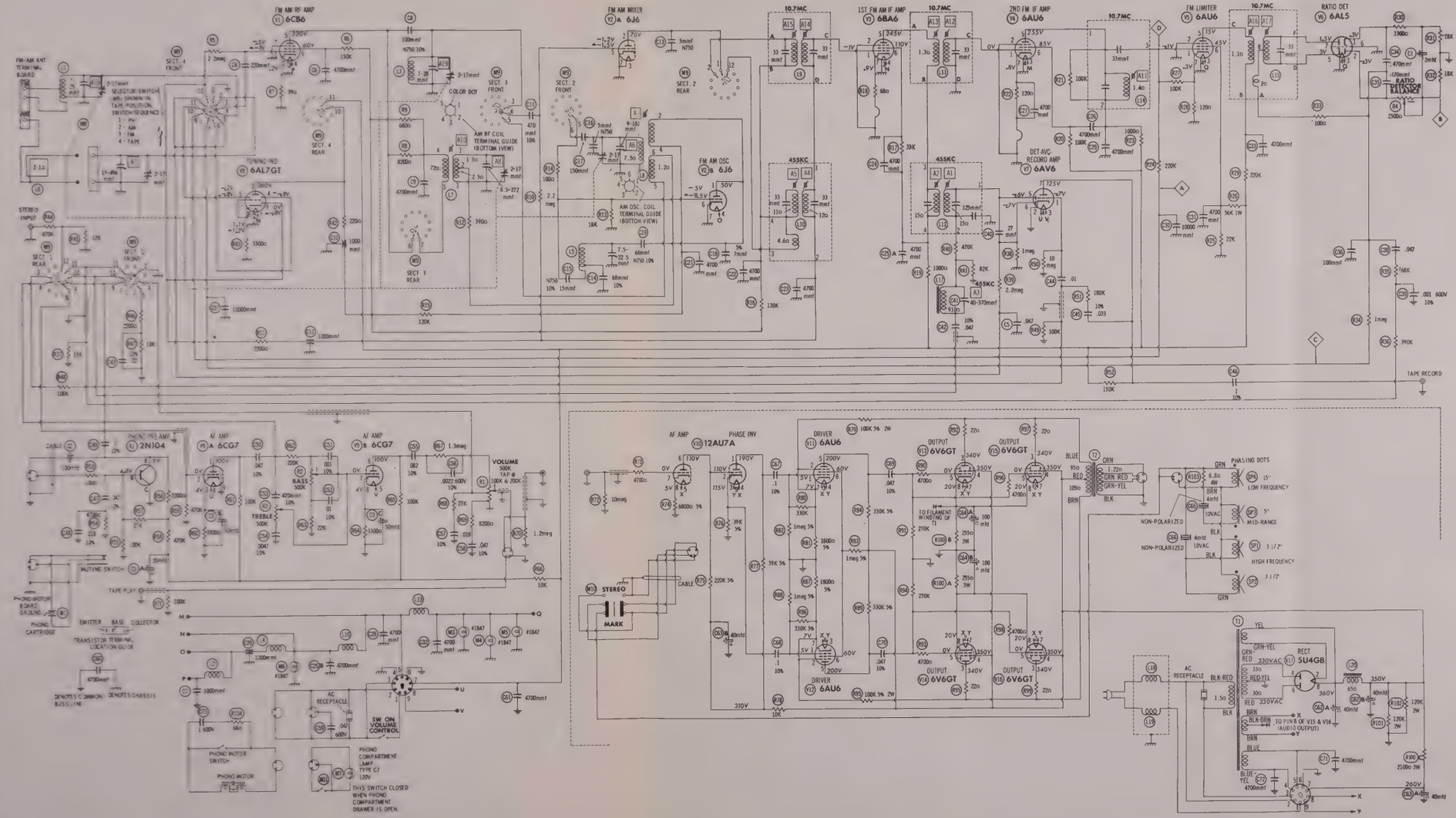
FIG. 2



AMPLIFIER CHASSIS - TOP VIEW



AMPLIFIER CHASSIS - BOTTOM VIEW



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6CB6	2.2meg ■5.4meg	39Ω	0Ω	.1Ω	†11K ■†3000Ω	†150K	0Ω		
V2	6J6	†120K	†120K	0Ω	.3Ω	2.2meg ■5.4meg	18K	0Ω		
V3	6BA6	2200Ω ■3.2meg	0Ω	0Ω	.3Ω	†2200Ω	†35K	68Ω		
V4	6AU6	.5Ω	0Ω	.3Ω	0Ω	†3100Ω	†100K	120Ω		
V5	6AU6	100K	0Ω	.3Ω	0Ω	†220K	†25K	120Ω		
V6	6AL5	21K	18K	.3Ω	0Ω	INF	0Ω	INF		
V7	6AV6	10meg	0Ω	255Ω	255Ω	550K	1meg	†150K		
V8	6AL7GT	3300Ω	0Ω	†2100Ω	INF ■3.2meg	3.2meg ■290K	3.2meg ■0Ω	.3Ω	3300Ω	
V9	6CG7	†110K	470K	3300Ω	255Ω	255Ω	†110K	22K	3300Ω	0Ω
V10	12AU7A	†49K	†230K	39K	255Ω	255Ω	†230K	10meg	6800Ω	255Ω
V11	6AU6	230K	1800Ω	255Ω	255Ω	†330K	†1meg	1800Ω		
V12	6AU6	230K	1800Ω	255Ω	255Ω	†330K	†1meg	1800Ω		
V13	6V6GT	NC	255Ω	†180Ω	†65Ω	270K	TP	255Ω	255Ω	
V14	6V6GT	NC	255Ω	†190Ω	†65Ω	270K	TP	255Ω	255Ω	
V15	6V6GT	NC	255Ω	†180Ω	†65Ω	270K	TP	255Ω	255Ω	
V16	6V6GT	NC	255Ω	†190Ω	†65	270K	TP	255Ω	255Ω	
V17	5U4GB	NC	20K(Min)	NC	33Ω	NC	30Ω	NC	20K(Min)	
	TYPE	BASE	EMITTER	COLLECTOR						
X1	2N104	75K	†90K	0Ω						

TRANSISTOR REMOVED FOR RESISTANCE MEASUREMENTS
ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED
† MEASURED FROM PIN 8 OF V17
■ MEASURED IN "AM" POSITION
NC NO CONNECTION
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

❶ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

TUNER PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	FM AM RF Amplifier	6CB6	
V2	FM AM Mixer - Osc.	6J6	
V3	1st FM AM IF Amplifier	6BA6	
V4	2nd FM IF Amplifier	6AU6	
V5	FM Limiter	6AU6	
V6	Ratio Detector	6AL5	
V7	Det. - AVC - Record Amp.	6AV6	
V8	Tuning Indicator	6AL7GT	
V9	AF Amplifier	6CG7	

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N104	Phono Preamplifier	CBS-2N180	2N104	CK872		

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	RCA Victor PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	2	50	79181	PRS50V2	BBR2-50	TC302	TD-2-50	MT-0502	TVA-1301
C2	100	25	100552	PRS25V100	BBR100-25	TC2501	TD-100-25	MTH-2510	TVA-1207
C3A	■20	400	102878		B0080	FP230	TMD-5	D-030	R2629 *
B	▲50	10			BR2045	TC29	TD-20-450	MT-4520	
C	50	10							

* Non Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	RCA Victor PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C4	220		75611	SI 220	D6-221	LT6T22	UC-5322	5GA-T22	
C5	.047	200	73558	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C6	4700		73473	BPD-0047	DD-472	BYA10D47	UC-5247	5HK-D47	
C7	1000		77252	BPD-001	DD-102	BYA6D1	DC521	5HK-D1	
C8	100		39396	N750-SI 100	TCN-100	CTA6T1U	NT-531	5TCU-T1	N750 10%
C9	4700		73473	BPD-0047	DD-472	BYA10D47	UC-5247	5HK-D47	
C10	1000		77084	EF-001	MFT-1000			503C-D1	
C11	470		76992	1464-00047	D6-471	5R5T47		MS-347	10%
C12	1000		77084	EF-001	MFT-1000			503C-D1	
C13	5		75613	N750-SI 5	TCN-5	CTA6V5U	NT-555	5TCU-V5	N750
C14	68		93229	NPO-DI 68	DD-680	L10Q68		5TCC-Q68	10%
C15	15		39044	N750-SI 15	TCN-15	CTA6Q15U		5TCU-Q15	N750 10%
C16	5		75613	N750-SI 5	TCN-5	CTA6V5U	NT-555	5TCU-V5	N750
C17	150		75614	SI 150	D6-151	LT6T15	UC-5315	5GA-T15	
C18	7		78262						NPO 5%
C19	68		75612	N750-SI 68	TCN-68	CTA6Q68U		5TCU-Q68	N750 10%
C20	1000		77084	EF-001	MFT-1000			503C-D1	
C21	4700		73473	BPD-0047	DD-472	BYA10D47	UC-5247	5GA-D47	
C22	4700		73473	BPD-0047	DD-472	BYA10D47	UC-5247	5GA-D47	
C23	4700		73473	BPD-0047	DD-472	BYA10D47	UC-5247	5GA-D47	
C24	4700		73473	BPD-0047	DD-472	BYA10D47	UC-5247	5GA-D47	
C25A	4700		76470	BPD-2X0047	DD-472	BYC6DD47	UC-5247	5HK-2D47	
B	4700				DD-472		UC-5247		
C26	4700		73473	BPD-0047	DD-472	BYA10D47	UC-5247	5GA-D47	
C27	4700		73473	BPD-0047	DD-472	BYA10D47	UC-5247	5GA-D47	
C28	4700		73473	BPD-0047	DD-472	BYA10D47	UC-5247	5GA-D47	
C29	4700		73473	BPD-0047	DD-472	BYA10D47	UC-5247	5GA-D47	
C30	10000		73960	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	

TUNER PARTS LIST AND DESCRIPTIONS (cont)

CAPACITORS (cont)

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	RCA Victor PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C31	4700		73473	BPD-0047	DD-472	BYA10D47	UC-5247	5GA-D47	
C32	4700		73473	BPD-0047	DD-472	BYA10D47	UC-5247	5GA-D47	
C33	4700		73473	BPD-0047	DD-472	BYA10D47	UC-5247	5GA-D47	
C34	470		76992	1464-00047	D6-471	5R5T47		MS-347	10%
C35	470		76992	1464-00047	D6-471	5R5T47		MS-347	10%
C36	100		103166	SI 100	D6-101	LT6T1	UC-531	5GA-T1	
C37	10000		73960	BPD-01	DD-103	BYA6S1	DC511	5HK-S1	
C38	.047	200	73558	P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C39	.001	600	75249				GEM-1621		10%
C40	27		100514	SI 27	D6-270	LT6Q27	UC-5427	5GA-Q27	
C41	40-370		100813						
C42	.047	200	73558						10%
C43	.22	200	100650				GEM-2022		10%
C44	.01	200	73561	P288N-01	D6-103	CUB2S1	GEM-411	2TM-S1	
C45	.033	400	100369						10%
C46	.1	400	78922				GEM-401		10%
C47	.047	200	73558						10%
C48	.018	200	77469						10%
C49	.1	400	73551				GEM-401		10%
C50	.047	400	78921B						10%
C51	.001	200	77533				GEM-1621		10%
C52	.01	200	101000				GEM-1611		10%
C53	470		75198		D6-471	5R5T47		MS-347	10%
C54	.0047	400	73920				GEM-16247		10%
C55	.082	400	103191						10%
C56	.0022	600	73595						10%
C57	.018	200	77469						10%
C58	.047	200	73558						10%
C59	.047	600	73592	P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C60	4700		73473	BPD-0047	DD-472	BYA10D47	UC-5247	5GA-D47	
C61	4700		73473	BPD-0047	DD-472	BYA10D47	UC-5247	5GA-D47	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	RCA Victor PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500K	½	104841					Volume, Tap ⓐ 100K & 200K Power On-Off
B	Switch							
R2A	500K	½	104840	B-60	A47-500K-Z	Q13-133	U48	Bass
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3A	500K	½	104839	B-59	A47-500K-S	Q11-133	U50	Treble
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R4	2300Ω	½	77199		JL-252			Ratio Detector Balance

* Use KR with CRL "red Label" controls and KB with "blue label" controls.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		RCA Victor PART No.	NOTES
	OHMS	WATT		
R5	2.2meg		502522	
R6	150K		502415	
R7	39Ω		502039	
R8	8200Ω		502282	
R9	680Ω		502168	
R10	2.2meg		502522	
R11	2200Ω		502222	
R12	390Ω		502139	
R13	18K		502318	
R14	100Ω		502110	
R15	120K		502412	
R16	120K		502412	
R17	33K		502333	
R18	68Ω		502068	

TUNER PARTS LIST AND DESCRIPTIONS (cont)

RESISTORS (cont)

ITEM No.	RATING OHMS	RATING WATT	RCA Victor PART No.	NOTES
R19	1000Ω		502210	
R20	100K		502410	
R21	100K		502410	
R22	120Ω		502112	
R23	1000Ω		502210	
R24	220K		502422	
R25	22K		502322	
R26	56K	1	512356	
R27	100K		502410	
R28	120Ω		502112	
R29	220K		502422	
R30	3300Ω		502233	
R31	18K		502318	
R32	18K		502318	
R33	100Ω		502110	
R34	1meg		502510	
R35	68K		502368	
R36	390K		502439	
R37	15K		502315	
R38	1meg		502510	
R39	2.2meg		502522	
R40	470K		502447	
R41	82K		502382	
R42	220Ω		502122	
R43	3300Ω		502233	
R44	470K		502447	
R45	12K		502312	

ITEM No.	RATING OHMS	RATING WATT	RCA Victor PART No.	NOTES
R46	2200Ω		502222	
R47	10K		502310	
R48	100K		502410	
R49	100K		502410	
R50	10meg		502610	
R51	180K		502418	
R52	150K		502415	
R53	100Ω		502110	
R54	4700Ω		502247	
R55	100K		502410	
R56	2200Ω		502222	
R57	27K		502327	
R58	470K		502447	
R59	470K		502447	
R60	3300Ω		502233	
R61	100K		502410	
R62	220K		502422	
R63	22K		502322	
R64	3300Ω		502233	
R65	100K		502410	
R66	10K		502310	
R67	1.5meg		502515	
R68	27K		502327	
R69	8200Ω		502282	
R70	1.2meg		502512	
R71	100K		502410	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA RCA Victor PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	FM Antenna Coil	77313					
L2	Fil. Choke	71942	19-1000	BC-561	4602		1.1 Microhenries
L3	FM RF Coil	77314					
L4	Fil. Choke	71942	19-1000	BC-561	4602		1.1 Microhenries
L5	FM Osc. Coil	77315					
L6	Loop Antenna	100534					
L7	AM RF Coil	77305					
L8	AM Osc. Coil	75569					
L9	1st FM IF	77514	16-3471				
L10	1st AM IF	100532					
L11	2nd FM IF	75560	16-3471				
L12	2nd AM IF	73037	16-6770	BC-355	12-C6	RF-2 *	* Add 125mmf Cap.
L13	Fil. Choke	71942	19-1000	BC-561	4602		1.1 Microhenries
L14	3rd FM IF	77939					
L15	Ratio Det.	73743	17-3488	FM-252	1453		
L16	Fil. Choke	71942	19-1000	BC-561	4602		1.1 Microhenries

10KC FILTER

ITEM No.	RATINGS CURRENT (Measured)	RATINGS DC RES.	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA RCA Victor PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L17		910Ω	1 Hy.	100528						

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA RCA Victor PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. MOUNT	REMARKS
M1	102956					Includes Diamond Needle

TUNER PARTS LIST AND DESCRIPTIONS (cont)

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA RCA Victor PART No.	JENSEN PART No.	WALCO PART No.	REMARKS
M2				

MISCELLANEOUS

ITEM No.	PART NAME	RCA Victor PART No.	NOTES
M3	Dial Lamp	103211	#1847
M4	Dial Lamp	103211	#1847
M5	Dial Lamp	103211	#1847
M6	Dial Lamp	103211	#1847
M7	Lamp	36728	Type C7, Screw Base, 120 Volt
M8	Tuning Cap.	103024	6 Gang (AM Sections: Ant. 28-452mmf, 25-290mmf, Osc. 19-190mmf)
M9	Switch	102903	Function, 4-Section Rotary Wafer
M10	Switch	104363	Pushbutton, "Stereo/Mark"
M11	Switch	105165	Pushbutton, Compartment Lamp

AMP PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V10	AF Amp. - Phase Inv.	12AU7A	
V11	Driver	6AU6	
V12	Driver	6AU6	
V13	Output	6V6GT	

ITEM No.	USE	TYPE	NOTES
V14	Output	6V6GT	
V15	Output	6V6GT	
V16	Output	6V6GT	
V17	Rectifier	5U4GB	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA RCA Victor PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C62A	▲40	450	102913	AFH2-57	B0450	FP238	TMD-54	D-235	TVL-2764
B	▲40	450							
C63A	▲40	450	102913	AFH2-57	B0450	FP238	TMD-54	D-235	TVL-2764
B	▲40	450							
C64A	▲100	50	102914	AFH2-06-20	B0085	WP202.5	TMS-12	D-035	TVL-2326
B	▲100	50					TD-100-50	MTH-5010	
C65	4	10VAC	100565	NP-PRS50V4	BBR8-150	TC41	TD-8-150	MT-1508	R2316 *
					BBR8-150 †	TC41 †	TD-8-150 †	MT-1508 †	
C66	4	10VAC	100565	NP-PRS50V4	BBR8-150	TC41	TD-8-150	MT-1508	R2316 *
					BBR8-150 †	TC41 †	TD-8-150 †	MT-1508 †	

† Connect negative leads together. * Non Catalog Item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA RCA Victor PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C67	.1	400	73551				GEM-401		10%
C68	.1	400	73551				GEM-401		10%
C69	.047	400	73553						10%
C70	.047	400	73553						10%
C71	4700		73473	BPD-0047	DD-472	BYA10D47	UC-5247	5GA-D47	
C72	4700		73473	BPD-0047	DD-472	BYA10D47	UC-5247	5GA-D47	
C73	.1	600	79149						

AMP PARTS LIST AND DESCRIPTIONS (cont)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	RCA Victor PART No.	NOTES
R72	10meg		502610	
R73	4700Ω		502247	
R74	6800Ω 5%		502268	
R75	220K 5%		502422	
R76	39K 5%		502339	
R77	39K 5%		502339	
R78	10K		502310	
R79	100K 5%	2	522410	
R80	330K		502433	
R81	1800Ω 5%		502218	
R82	1meg 5%		502510	
R83	1meg 5%		502510	
R84	330K 5%		502433	
R85	100K 5%	2	522410	
R86	330K		502433	
R87	1800Ω 5%		502218	
R88	1meg 5%		502510	
R89	330K 5%		502433	

ITEM No.	RATING OHMS	RATING WATT	RCA Victor PART No.	NOTES
R90	4700Ω		502247	
R91	270K		502427	
R92	22Ω		502022	
R93	4700Ω		502247	
R94	270K		502427	
R95	22Ω		502022	
R96	4700Ω		502247	
R97	22Ω		502022	
R98	4700Ω		502247	
R99	22Ω		502022	
R100A	255Ω	3		
B	255Ω	3	100533	
C	2100Ω	3		
R101	120K	2	522412	
R102	120K	2	522412	
R103	6.8Ω	4	104827	
R104	68Ω		502068	

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RCA Victor PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .15A	680VCT @ .220A	5V @ 3A	104825					26R21	
	SEC. 3	SEC. 4	SEC. 5							
	6.3VCT @ 3.4A	6.3V @ 2.4A								

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	RCA Victor PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	5200Ω	16Ω Tap @ 8Ω, 4Ω	100536				A-3800		S-35A ①	① Drill new mounting holes.

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	RCA Victor PART No.	QUAM PART No.	NOTES
SP1	3½"	PM	6-8Ω	100465	3A15TZ6.6	
SP2	3½"	PM	6-8Ω	100465	3A15TZ6.6	
SP3	5"	PM	6-8Ω	100603	5A1Z8T	
SP4	15"	PM	6-8Ω	104826	15A10L	

COILS

ITEM No.	USE	RCA Victor PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L18	Line Choke	103698					
L19	Line Choke	103698					

AMP PARTS LIST AND DESCRIPTIONS (cont)

FILTER CHOKE

ITEM No.	RATINGS CURRENT (Measured)	RATINGS DC RES.	RATINGS INDUCTANCE (0 CURRENT 1000 ∿)	REPLACEMENT DATA RCA Victor PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L20	.225A	65Ω	5 Hy.	100527				C-2334	20C49	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial Pointer	104820	
Dial Scale	104855	
Knob	103924	Bass and Treble
Knob	103923	Function Switch
Knob	103921	Tuning
Knob	103922	Volume
Cabinet	X4228	Mahogany
Cabinet	X4230	Oak
Cabinet	X4229	Walnut

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting) ..... Use BELDEN No. 8401
Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

RAULAND MODELS 1925, A

RAULAND MODELS 1925, A

RAULAND MODELS 1925, A

TRADE NAME	Rauland Model 1925, A		
MANUFACTURER	Rauland-Borg Corp., 3515 W. Addison St., Chicago 18, Illinois		
TYPE SET	AC-Battery Operated 3 Channel 25 Watt Audio Amplifier With 3 Speed Manual Record Player		
TUBES (Seven)	Types 12AX7 Mic 1-Mic 2 Preamp., 6C4 AF Mixer, 12AX7 AF Amp. - Phase Inv., (2) 6L6G Output, (2) 6X5GT Rectifier		
POWER SUPPLY	117 (or) 130 Volts AC - 60 Cycles 12 Volt Storage Battery 6 Volt Stroage Battery	RATING	.92 Amp. @ 117 Volts AC (100 Watts) 8.75 Amp. @ 12.6 Volts DC 15.5 Amp. @ 6.3 Volts DC

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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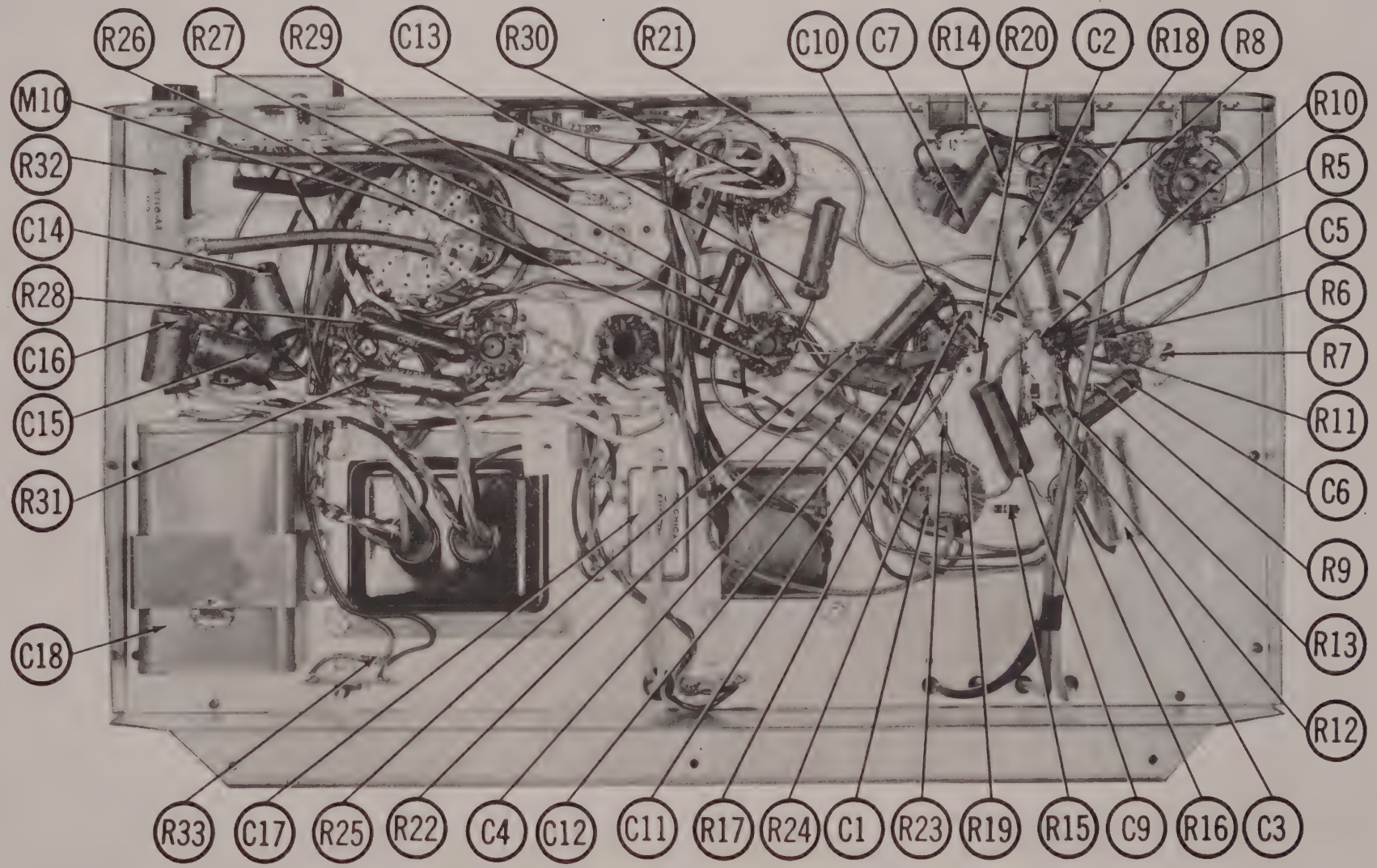


CHASSIS BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Mic 1 Preamp. - Mic 2 Preamplifier	12AX7	
V2	AF Mixer	6C4	
V3	AF Amp. - Phase Inv.	12AX7	
V4	Output	6L6G	
V5	Output	6L6G	
V6	Rectifier	6X5GT	
V7	Rectifier	6X5GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	RAULAND PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	◓40	450	CE-706A	AFH4-17	D0160	FP475.5	TMQ-17	Q-055	TVL-4771.3
B	■10	450							
C	▲10	450							
D	10	450							
C2	8	450	CE-805B	PRS450V8	BR845	TC71	TD-8-450	MT-4508	TVA-1704
C3	35	50	CE-406K-A ①	PRS50V50	BR505	TC39	TD-50-50	MT-0550	TVA-1308
C4	35	50	CE-406K-A	PRS50V50	BR505	TC39	TD-50-50	MT-0550	TVA-1308

① Not used in some versions.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	RAULAND PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C5	.01	600		P688N-01	D6-103	CUB6S1	GEM-611	6TM-S1	
C6	.01	600		P688N-01	D6-103	CUB6S1	GEM-611	6TM-S1	
C7	.047	600		P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C8	4700			BPD-0047	DD-472	BYA10D47M	UC-5247	5HK-D47	
C9	.047	600		P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C10	.047	600		P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C11	100			1468-0001	DD-101	5W5T1	MC235	1FM-31	
C12	.047	600		P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C13	.047	600		P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C14	.47	100		P288N-47		CUB2P47	GEM-2047	2TM-P47	
C15	.47	100		P288N-47		CUB2P47	GEM-2047	2TM-P47	
C16	.47	100		P288N-47		CUB2P47	GEM-2047	2TM-P47	
C17	.5	400							
C18	4	600							

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	RAULAND PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	3.5meg	½	RP-335	B-85	A47-3meg-Z	Q13-140	U57	Mic 1 Note 1
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R2A	3.5meg	½	RP-335	B-85	A47-3meg-Z	Q13-140	U57	Mic 2 Note 1
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R3A	3.5meg	½	RP-335	B-85	A47-3meg-Z	Q13-140	U57	Phono Note 1
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R4A	3.5meg	½	RP-335	B-85	A47-3meg-Z	Q13-140	U57	Tone Note 1
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

Note 1. Some versions may use 500K in this application (Part #RP-504B).

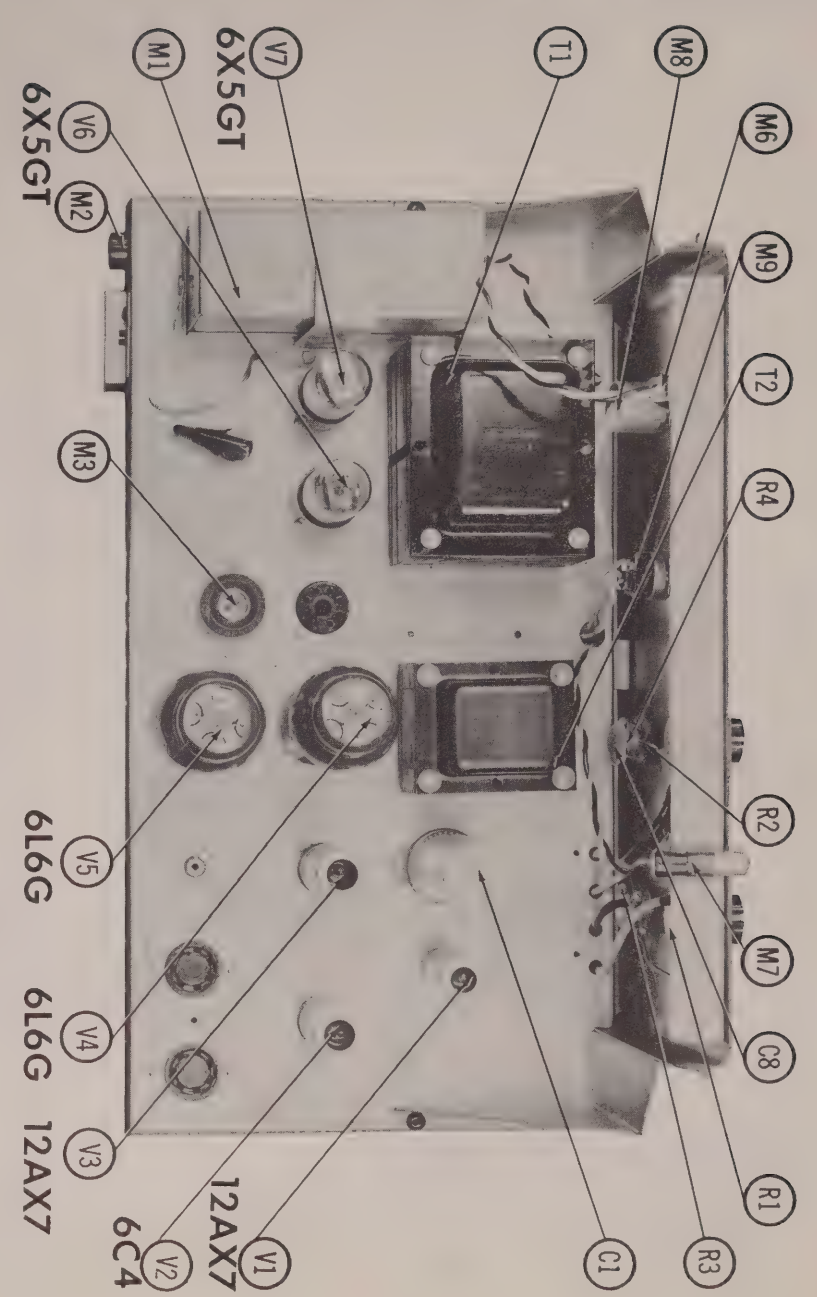
RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	RAULAND PART No.	NOTES
R5	470K			
R6	220K			
R7	2200Ω			
R8	470K			
R9	220K			
R10	100K			
R11	2200Ω			
R12	100K			

ITEM No.	RATING OHMS	RATING WATT	RAULAND PART No.	NOTES
R13	100K			
R14	100K			
R15	100K			
R16	3300Ω			
R17	470K			
R18	220K			
R19	22K			
R20	2200Ω			

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (cont)

ITEM No.	RATING OHMS	RATING WATT	RAULAND PART No.	NOTES
R21	15K			
R22	470K			
R23	68K			
R24	4700Ω			
R25	1500Ω			
R26	68K			
R27	470K			
R28	7500Ω	10		
R29	200Ω	10		
R30	470K			
R31	10Ω	10		
R32	.2Ω			
R33	68Ω			

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA RAULAND PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
	AC OPERATION									
T1	130V Tap @ 117V @ .92A	660VCT @ .120A	6.3VCT @ 1.5A ① 6.3VCT @ 2.2A ②	6.3VCT @ 1.5A ① 6.3VCT @ 2.2A ②	LP-0239A					
	DC OPERATION									
	PRI. 1	PRI. 2	SEC. 1							
	6.3VCT @ 2.5A ③ 6.3VCT @ 3A ④	6.3VCT @ 2.5A ③ 6.3VCT @ 3A ④	660VCT @ .120A							

① 6V Filament operation.
② 12V Filament operation.
③ 6V Input operation.
④ 12V Input operation.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA RAULAND PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	8000Ω CT	500Ω Tap @ 250Ω 167Ω (70V) 16Ω 8Ω, 4Ω	LO-0093E							

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA RAULAND PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	RADIART PART No.	NOTES
M1	Interrupter	6V (or) 12V	60~	JV-0021	6VB6UL		6VB6UL	

PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA RAULAND PART No. FUSE	RAULAND PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M2	3AG	6 1/4A 32V			3136.25 (6.25A 32V)	341001	MDL 6 1/4	HKP
M3	Screw-In Plug	25A 125V					W25	

PHONO CARTRIDGE

ITEM No.	RAULAND PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. MOUNT	REMARKS
M4		55-T * P-55-T	GD-J	56 * 2756	PT2	* Tone Arm complete with cartridge.

ASTATIC NEEDLE LISTING SHOWN ABOVE IS SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	RAULAND PART No.	JENSEN PART No.	WALCO PART No.	REMARKS
M5		* A-72 or † A-71 or †♦ A-71SD or ♦ A-71D	† W8TPS or †♦ W8DS or ♦ W8TPD	* Metal † Jewel ♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	RAULAND PART No.	NOTES
M6	Pilot Lamp		#1847
M7	Pilot Lamp		#1847
M8	Switch		Power On-Off (SPST)
M9	Switch		Stand By (SPST)
M10	Switch	X-0305-A	Power Change-over (Rotary Wafer Type)
	Cable Ass'y	VW-0920	AC
	Cable Ass'y	VW-0921	DC

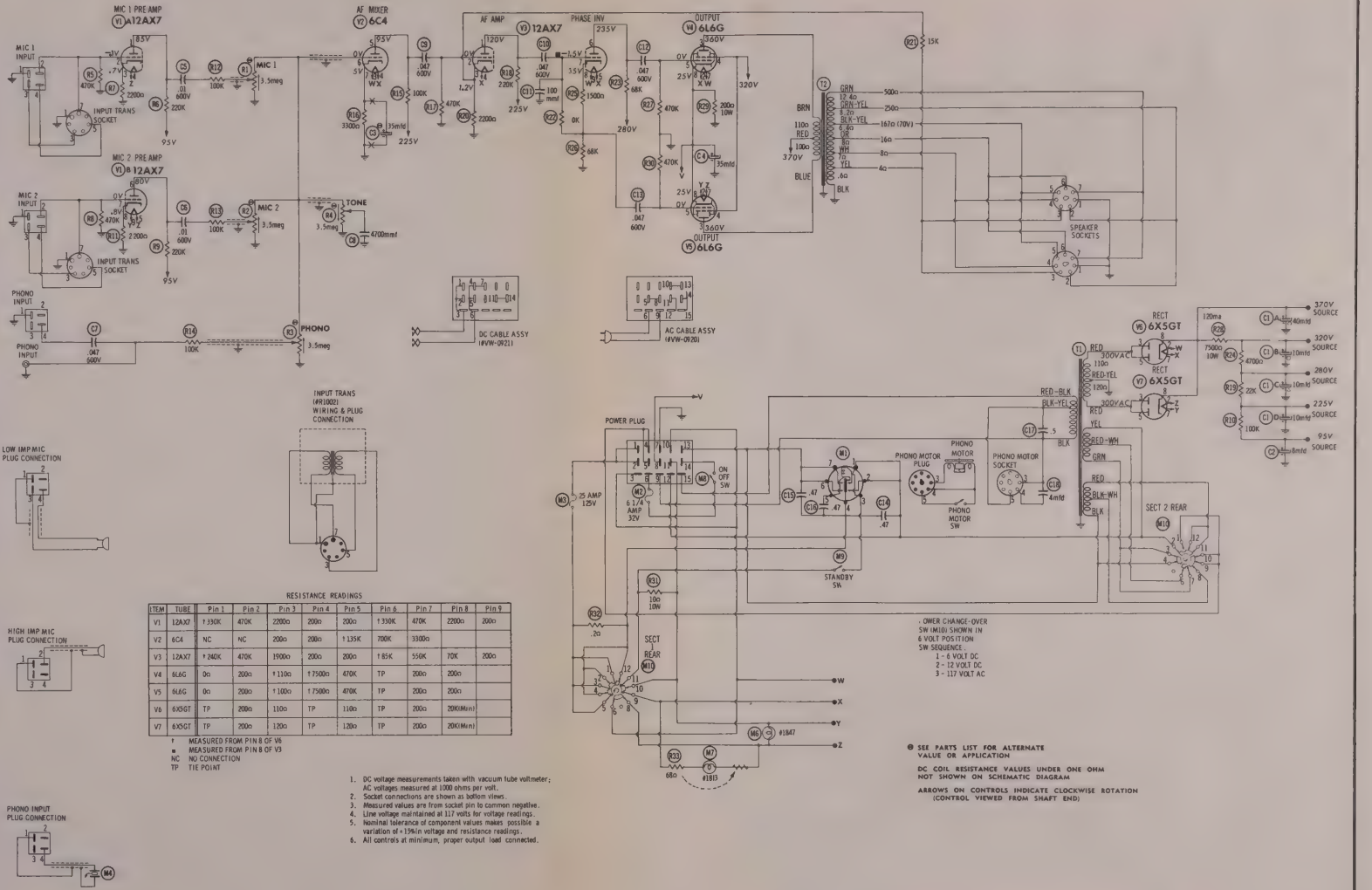
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

Low-Loss Shielded Lead (Interconnecting) ..... Use BELDEN No. 8401

Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†330K	470K	2200Ω	200Ω	200Ω	†330K	470K	2200Ω	200Ω
V2	6C4	NC	NC	200Ω	200Ω	†135K	700K	3300Ω		
V3	12AX7	†240K	470K	1900Ω	200Ω	200Ω	†85K	550K	70K	200Ω
V4	6L6G	0Ω	200Ω	†110Ω	†7500Ω	470K	TP	200Ω	200Ω	
V5	6L6G	0Ω	200Ω	†100Ω	†7500Ω	470K	TP	200Ω	200Ω	
V6	6X5GT	TP	200Ω	110Ω	TP	110Ω	TP	200Ω	20K(Min)	
V7	6X5GT	TP	200Ω	120Ω	TP	120Ω	TP	200Ω	20K(Min)	

† MEASURED FROM PIN 8 OF V6
■ MEASURED FROM PIN 8 OF V3
NC NO CONNECTION
TP TIE POINT

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

· OWER CHANGE-OVER SW (M10) SHOWN IN 6 VOLT POSITION
SW SEQUENCE :
1 - 6 VOLT DC
2 - 12 VOLT DC
3 - 117 VOLT AC

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

PHOTOFACT* Folder

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ROCKLAND MODELS 88-1-S, 88-1-SR

ROCKLAND MODELS
88-1-S, 88-1-SR

TRADE NAME	Rockland Models 88-1-S, 88-1-SR
MANUFACTURER	Rockland Precision Mfg. Co., Inc., Orangeburg, N. Y.
TYPE SET	Battery Operated Portable Transistorized AM Receiver With 45RPM Manual Record Player
POWER SUPPLY	6 Volts DC
RATING	10.2MA @ 6 Volts DC (No Signal)
TUNING RANGE—BROADCAST	540 - 1600KC

ROCKLAND MODELS
88-1-S, 88-1-SR

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Direct	High side to junction of L1 and C4. Low side to C1 positive terminal.	455KC (400~ Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3	Adjust for maximum output.
2.		Loop	540KC	540KC	"	A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1600KC	1600KC	"	A5, A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Repeat alignment procedure until no further improvement can be obtained.

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

ROCKLAND
MODEL 88-1-S

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N412	Converter		2N412	2N486		
X2	2N410	1st IF Amplifier		2N410	2N483		
X3	2N410	2nd IF Amplifier		2N410	2N483		
X4	OC71	Driver	CBS-2N180		CK872		Alternate Type 2N180
X5	2N217	Output	CBS-2N180	2N217	CK878		
X6	2N217	Output	CBS-2N180	2N217	CK878		

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	ROCKLAND PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	16	3	88T-C12	PWE3015	NL15-6	TT6X15	ML15-25		TE1053.5
C2	50	10	88T-C13	PWE10050	NL50-10	TT10X50	ML50-15		R2305 *
C3	100	15	88A-C3	PRS15V100	BBR100-15	TC2501	TD-100-15	MTH-1510	TVA-1160

* Non Catalog Item

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	ROCKLAND PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C4	20000		88T-C1	BPD-02	DA-203	BYB6S2		5GA-S2	
C5	20000		88T-C3	BPD-02	DA-203	BYB6S2		5GA-S2	
C6	20000		88T-C4	BPD-02	DA-203	BYB6S2		5GA-S2	
C7	5		88T-C9	DI-000005	DD-050	LJ0V5	ZT-555	5GA-V5	
C8	50000		88T-C5	BPD-05	DA-503			5HK-S5	
C9	20000		88T-C6	BPD-02	DA-203	BYB6S2		5GA-S2	
C10	5		88T-C10	DI-000005	DD-050	LI0V5	ZT-555	5GA-V5	
C11	20000		88T-C8	BPD-02	DA-203	BYB6S2		5GA-S2	
C12	50000		88T-C7	BPD-05	DA-503			5HK-S5	
C13	20000		88T-C11	BPD-02	DA-203	BYB6S2		5GA-S2	
C14	.01	200	88A-C1	P288N-01	DD-103	BC2SIJ	ACE611	2SE-S10	
C15	.22	200	88A-C3	P288N-22		DC2P22J	ACE6022	2SE-P22	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	ROCKLAND PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	50K	½	88A-R1					Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		ROCKLAND PART No.	NOTES
	OHMS	WATT		
R2	33K		88T-R2	
R3	100K		88T-R1	
R4	100K		88T-R12	
R5	220Ω		88T-R4	
R6	1500Ω		88T-R3	
R7	56K		88T-R5	
R8	22K		88T-R13	
R9	220Ω		88T-R7	
R10	220Ω		88T-R6	
R11	2200Ω		88T-R9	
R12	33K		88T-R8	

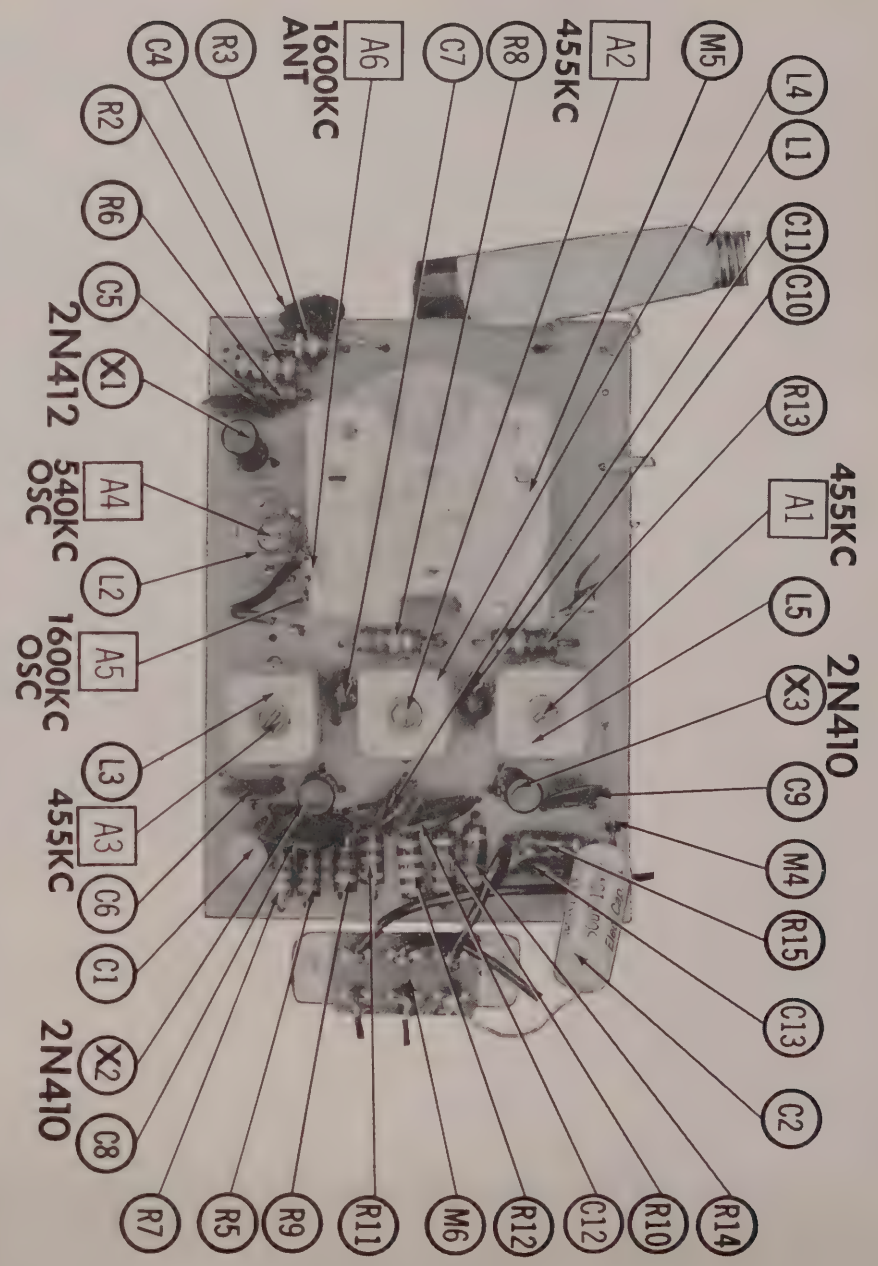
ITEM No.	RATING		ROCKLAND PART No.	NOTES
	OHMS	WATT		
R13	22K		88T-R14	
R14	220Ω		88T-R10	
R15	2200Ω		88T-R11	
R16	6800Ω		88A-R2	
R17	82K		88A-R3	
R18	150Ω		88A-R7	
R19	68Ω		88A-R4	
R20	4700Ω		88A-R8	
R21	150Ω		88A-R5	
R22	2.7Ω	1	88A-R6	Note 1

Note 1. Some versions may use 3Ω 1W in this application.

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	ROCKLAND PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	L5	:1 ①	88A-T1						① Secondary winding center tapped

TUNER CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	ROCKLAND PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	395Ω CT	3-4Ω	88A-T2							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ROCKLAND PART No.	QUAM PART No.	
SP1	3½"	PM	3-4Ω	M-351 ①	3A07	① Alternate Part #33-S

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		ROCKLAND PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loop Stick	88T-L1					
L2	Osc. Coil	88T-L2					
L3	1st IF	88T-T1			2031		
L4	2nd IF	88T-T2			2031		
L5	3rd IF	88T-T3			2031		

BATTERIES

ITEM No.	VOLTAGE	ROCKLAND PART No.	REPLACEMENT DATA								NOTES
			BURGESS		EVEREADY		MALLORY		RAY-O-VAC		
			"A"	"B"	"A"	"B"	"A"	"B"	"A"	"B"	
M1	6V			2R		950		M-13R		2LP	4 Used

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	ROCKLAND PART No.	ASTATIC PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	MOUNT	
M2	88-C ①	124-TS	N8-1 & N8-3			① Includes needle

ASTATIC NEEDLE LISTING SHOWN ABOVE IS SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	ROCKLAND PART No.	JENSEN PART No.	WALCO PART No.	
M3	88-N	* W-58LP or † W-57LP or ♦ W-57LPD	† W-65MGS or † W-65AGS or ♦ W-65MGD	* Metal † Jewel ♦ Diamond

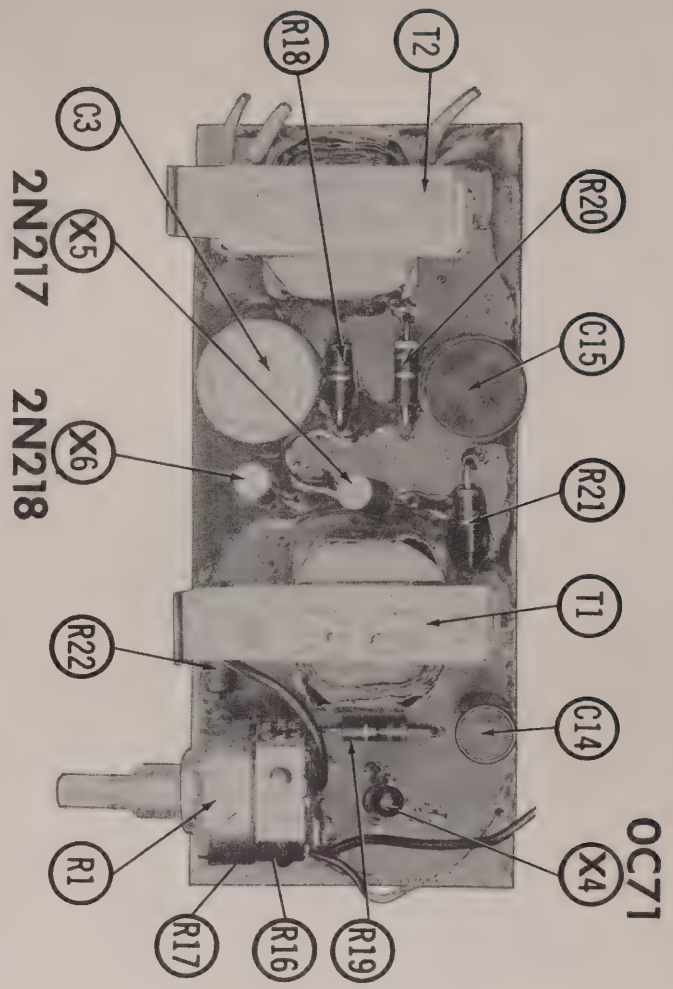
CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		ROCKLAND PART No.	CBS PART No.	SYLVANIA PART No.	
M4	1N69	88T-D1	1N69	1N69	Detector, Pigtail Leads

MISCELLANEOUS

ITEM No.	PART NAME	ROCKLAND PART No.	NOTES
M5	Tuning Cap.	88T-C2	2 Gang (Ant. 18-218mmf, Osc. 22-125mmf)
M6	Switch	88-SW	Radio-Phono (Slide Type)
M7	Motor	88-KM	Phono Motor Ass'y

AMP CHASSIS—TOP VIEW



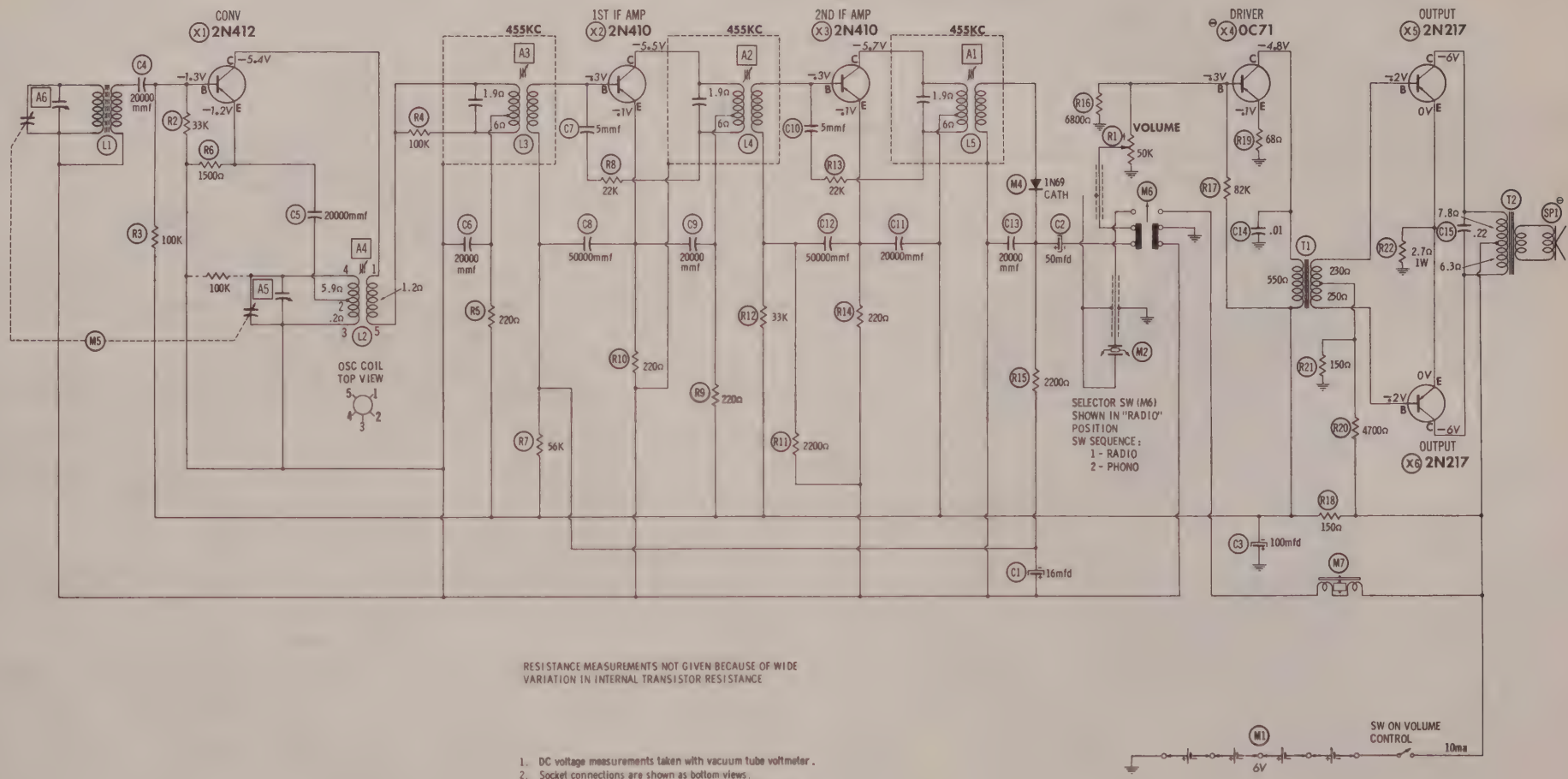
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	88-TN	Tuning
Knob	88-VN	Volume
Cabinet	88-C-1-SR	Case & Motor Board Ass'y, Model 88-1-SR
Cabinet	88-C-1-S	Case & Motor Board Ass'y, Model 88-1-S
Cabinet	88-FG	Front Frame & Grille Ass'y

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors



RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

TRUETONE MODEL D3715A

TRUETONE MODEL D3715A

TRADE NAME	Truetone Model D3715A
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City 8, Mo.
TYPE SET	Battery Operated Portable AM Transistorized Receiver
POWER SUPPLY	9 Volts DC
RATING	10.7MA@ 9 Volts DC (No Signal)
TUNING RANGE—BROADCAST	540-1620KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.5mfd	High side to base of X1. Low side to chassis.	455KC (400~Mod)	Tuning gang fully open	Across voice coil	A1, A2,	Adjust for maximum output.
2.	"	"	1620KC	"	"	A3	"
3.	"	"	535KC	Tuning gang fully closed	"	A4	"
4.	"	"	1620KC	Tuning gang fully open	"	A3	"
5.		Loop	1400KC	1400KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output while rocking tuning gang.

DISASSEMBLY INSTRUCTIONS

1. Remove push-on type volume control knob.
2. Remove center screw from tuning knob. Remove knob.
3. Remove screw under tuning knob. Remove case cover.
4. Remove battery.
5. Remove 3 screws holding chassis to case bottom.
6. Remove chassis. Guide battery leads thru hole in case.

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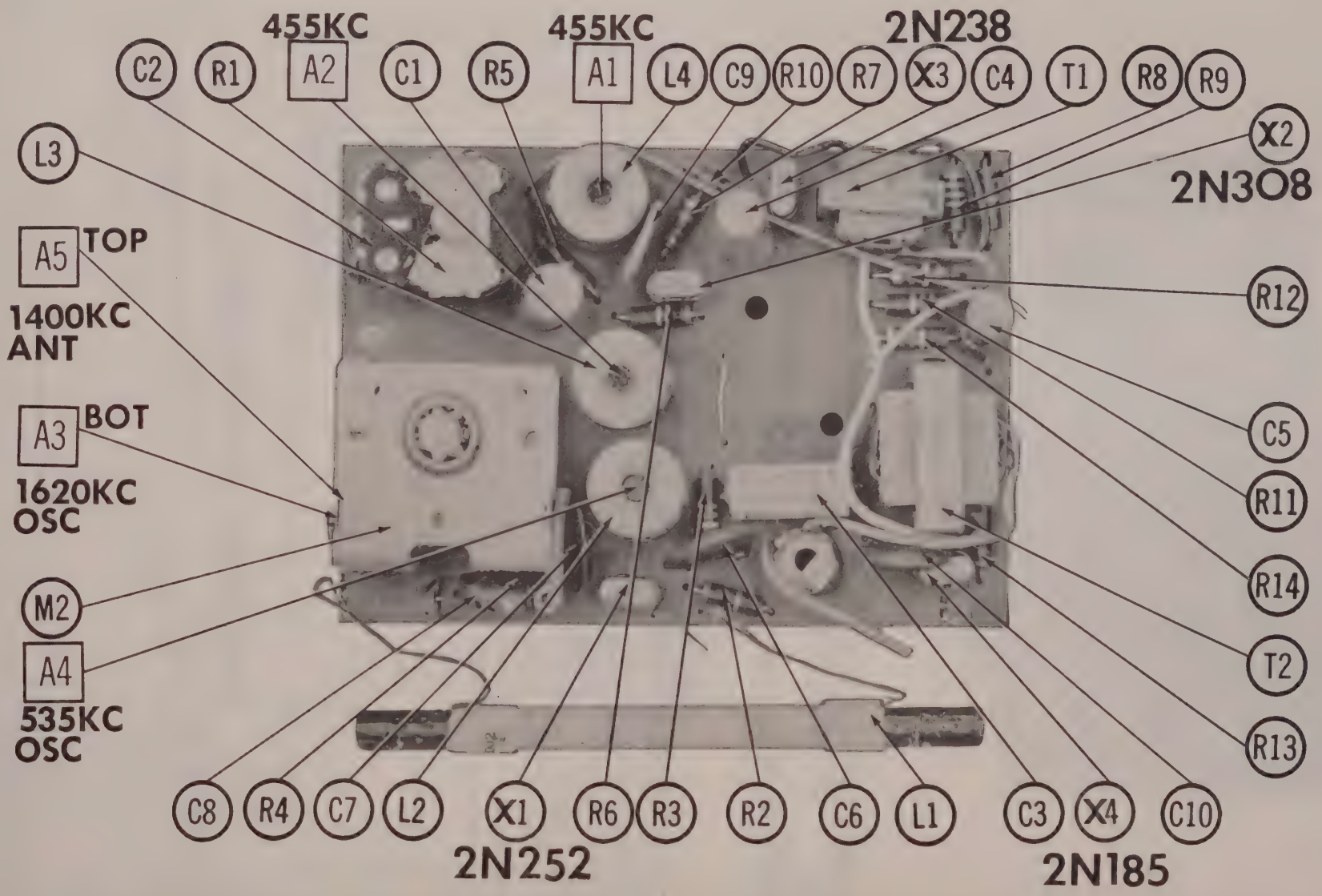


CHASSIS TOP VIEW

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N252	Converter		2N140	2N415		
X2	2N308	IF Amplifier		2N247			
X3	2N238	AF Amplifier	2N180	2N217	2N362	2N34	
X4	2N185	Output	2N180	2N109	2N359	2N383	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	TRUETONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1	15	3	245-200011	XPP-3015	NL15-6	TT6X15			TE-1089
C2	6	3	245-200009	XPP-3006	NL5-6	TT6X5	ML6-6		R2280 *
C3	50	10	245-200008	PWE10050	NL50-10	TT10X50			R2305 *
C4	50	3	245-200013	XPP-3050	NL50-3	TT6X50	ML50-3		R2479 *
C5	30	3	245-200012	XPP-3030	NL30-6	TT6X30	ML30-6		TE-1092

* Non-catalog item.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT	TRUETONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	MALLORY PART No.	SPRAGUE PART No.	
C6	10000		245-300016	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	
C7	5000		247-300018	BPD-005	DD-502	BYA10D5	ED-005	DC525	5HK-D5	
C8	10		491-106100-25	NPO-SI 10	TCZ-10	CTA6Q1C	TCO-10	ZT-541	5TCC-Q1	NPO 10%
C9	50000		247-300017	BPD-05					TG-S50	
C10	10000		247-300016	BPD-01	DD-103	BYA6S1	ED-01	DC511	5HK-S1	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	TRUETONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	10K	½	225-200011					Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		TRUETONE PART No.	NOTES
	OHMS	WATT		
R2	8200Ω		451-252822	
R3	39K		451-252393	
R4	3300Ω		451-252332	
R5	5600Ω		451-252562	
R6	100K		451-252104	
R7	1000Ω		451-252102	
R8	6800Ω		451-252682	

ITEM No.	RATING		TRUETONE PART No.	NOTES
	OHMS	WATT		
R9	33K		451-252333	
R10	1000Ω		451-252102	
R11	560Ω		451-252561	
R12	3900Ω		451-252392	
R13	82Ω		451-252820	
R14	470Ω		451-252471	

TRANSFORMER (INTERSTAGE)

ITEM No.	TURNS RATIO		REPLACEMENT DATA							NOTES
	PRI.	SEC.	TRUETONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	3:	1	255-300009							

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	TRUETONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	1215Ω	15Ω	255-300010					TR-10		

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	TRUETONE PART No.	QUAM PART No.	
SP1	2 3/4"	PM	15Ω	285-300004 ①		① Alternate part #285-100006

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		TRUETONE PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loop Stick	257-300002					
L2	Osc. Coil	251-200007					
L3	Input IF	250-200002					
L4	Output IF	250-200003					Includes crystal & cap.

BATTERIES

ITEM No.	VOLTAGE	TRUETONE PART No.	REPLACEMENT DATA								NOTES
			BURGESS		EVEREADY		MALLORY		RAY-O-VAC		
			"A"	"B"	"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V	3B6464		2N6		246		M-1602		1602	

MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M2	Tuning Cap.	248-300001	2 Gang (Ant. 17-195mmf, Osc. 13-113mmf)

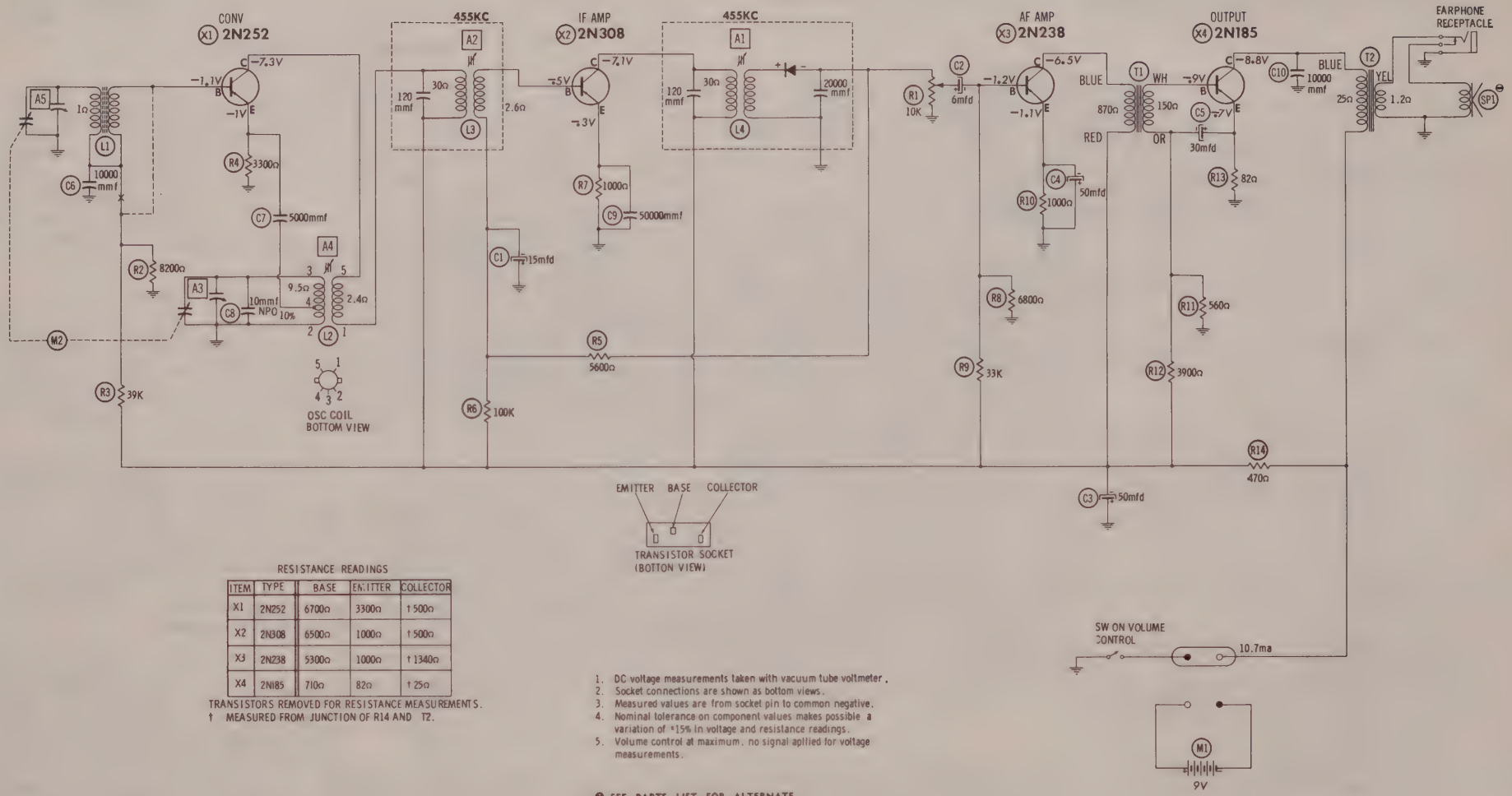
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	215-300048	Tuning
Knob	215-200049	On-off-volume
Case	316-400002	Turquoise
Battery Cover	116-100066	Turquoise

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors



RESISTANCE READINGS

ITEM	TYPE	BASE	EMITTER	COLLECTOR
X1	2N252	6700Ω	3300Ω	†500Ω
X2	2N308	6500Ω	1000Ω	†500Ω
X3	2N238	5300Ω	1000Ω	†1340Ω
X4	2N185	710Ω	82Ω	†25Ω

TRANSISTORS REMOVED FOR RESISTANCE MEASUREMENTS.
† MEASURED FROM JUNCTION OF R14 AND T2.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

PHOTOFACT* Folder

WESTINGHOUSE MODELS H-435T5A, H-437T5A, H-438T5A (Ch. V-2390-3)

WESTINGHOUSE MODELS H-435T5A, H-437T5A, H-438T5A (Ch. V-2390-3)

TRADE NAME	Westinghouse Models H-435T5A, H-437T5A, H-438T5A (Ch. V-2390-3)
MANUFACTURER	Westinghouse Electric Corp., TV-Radio Div., Metuchen, N.J.
TYPE SET	AC-DC Operated AM Receiver
TUBES (Five)	Types 12BE6 Converter, 12BA6 IF Amplifier, 12AV6 Det.-AVC-AF Amp., 50C5 Output, 35W4 Rectifier
POWER SUPPLY	105-120 Volts AC-DC — RATING .27 Amp. @ 117 Volts AC (24 Watts)
TUNING RANGE—BROADCAST	540-1600KC

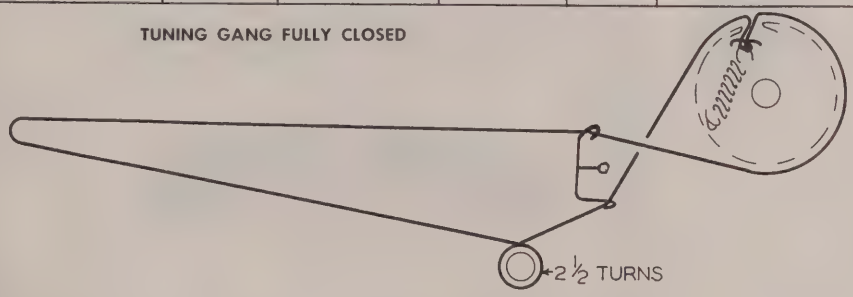
ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	200mmf	High side to pin 7 (grid) of 12BE6 (V1). Low side to B-.	455KC (400~ Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001mfd to reduce hum modulation.
2.		Loop	1625KC	1625KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	1400KC	"	A6	"

TUNING GANG FULLY CLOSED



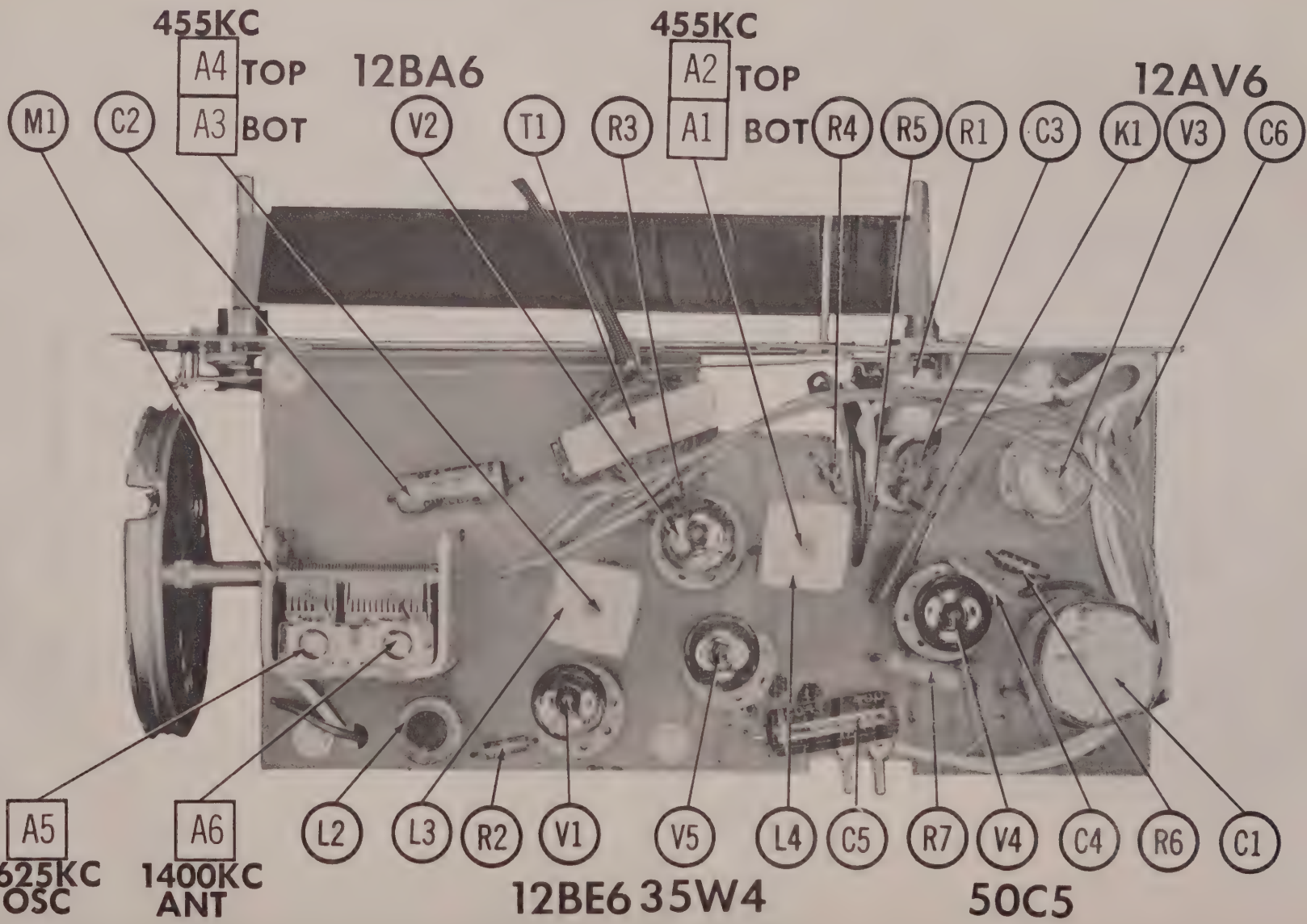
DIAL CORD STRINGING

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1958 Howard W. Sams & Co., Inc., Indianapolis 5, Indiana. Printed in U.S. of America

H435

SET 405 FOLDER 16



CHASSIS TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	12BE6	
V2	IF Amplifier	12BA6	
V3	Det.-AVC-AF Amp.	12AV6	
V4	Output	50C5	
V5	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	Westinghouse PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SANGAMO PART No.	SPRAGUE PART No.
C1A	■50	150	218V029H01	PRS150V5050	BBRD5515	TCD49	TDLD-9	MTD-1550	TVA-2453
B	▲50	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT	Westinghouse PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	.05	200	210V111H05	P288N-05	DF-503	CUB2S5	GEM-415	2TM-S5	
C3	4700		215V104A72	BPD-0047	DD-472	BYA10D47M	UC-5247	5GA-D47	
C4	10000	1000	210V300H03		DD-103	BYA10S1		10HKB-S1	
C5	.047	400		P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C6	10000	1000	215V300H03		DD-103	BYA10S1		10HKB-S1	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Westinghouse PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500K	½	270V039H03		A47-500K-Z		PP55T254	Volume, Tap @ 200K
B	Shaft				FS-3			
C	Switch				SWE-12			

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		Westinghouse PART No.	NOTES
	OHMS	WATT		
R2	22K		250V232A23	
R3	150Ω		250V231A51	
R4	3.3meg		250V233A35	
R5	68K		250V236A83	
R6	180Ω		250V221A81	
R7	1500Ω	1	250V331A52	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	Westinghouse PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	3100Ω	2-3Ω	430V042H01				A-3328 ①			

① Bend down tabs or use original mounting frame.

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Westinghouse PART No.	QUAM PART No.	
SP1	4"	PM	4Ω	570V026H01	4A1Z4	
SP2	4"	PM	4Ω	570V026H01	4A1Z4	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		Westinghouse PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loop Ant.	310V019H01					Includes cabinet back and line cord
	Loop Ant.	317V006H08					Alternate
L2	Osc. Coil	230V004H02					
L3	Input IF	235V023H12	16-6780	BC-356	13-PC9	RF-4	
	Input IF	235V023H01	16-6780	BC-356	13-PC9	RF-4	Alternate
L4	Ouput IF	235V023H12	16-6780	BC-357	13-PC10	RF-4	
	Output IF	235V023H01	16-6780	BC-357	13-PC10	RF-4	Alternate

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	Westinghouse PART No.	REPLACEMENT DATA
K1	Audio Coup. Net.	100mmf, 150mmf, 220mmf, 5000mmf, 5000mmf, 470K, 470K, 6.8meg	219V001H01	Centralab PC-158 Sprague DT-5

MISCELLANEOUS

ITEM No.	PART NAME	Westinghouse PART No.	NOTES
M1	Tuning Cap.	330V011H02	2 Gang (Ant. 25-390mmf)

CABINETS & CABINET PARTS

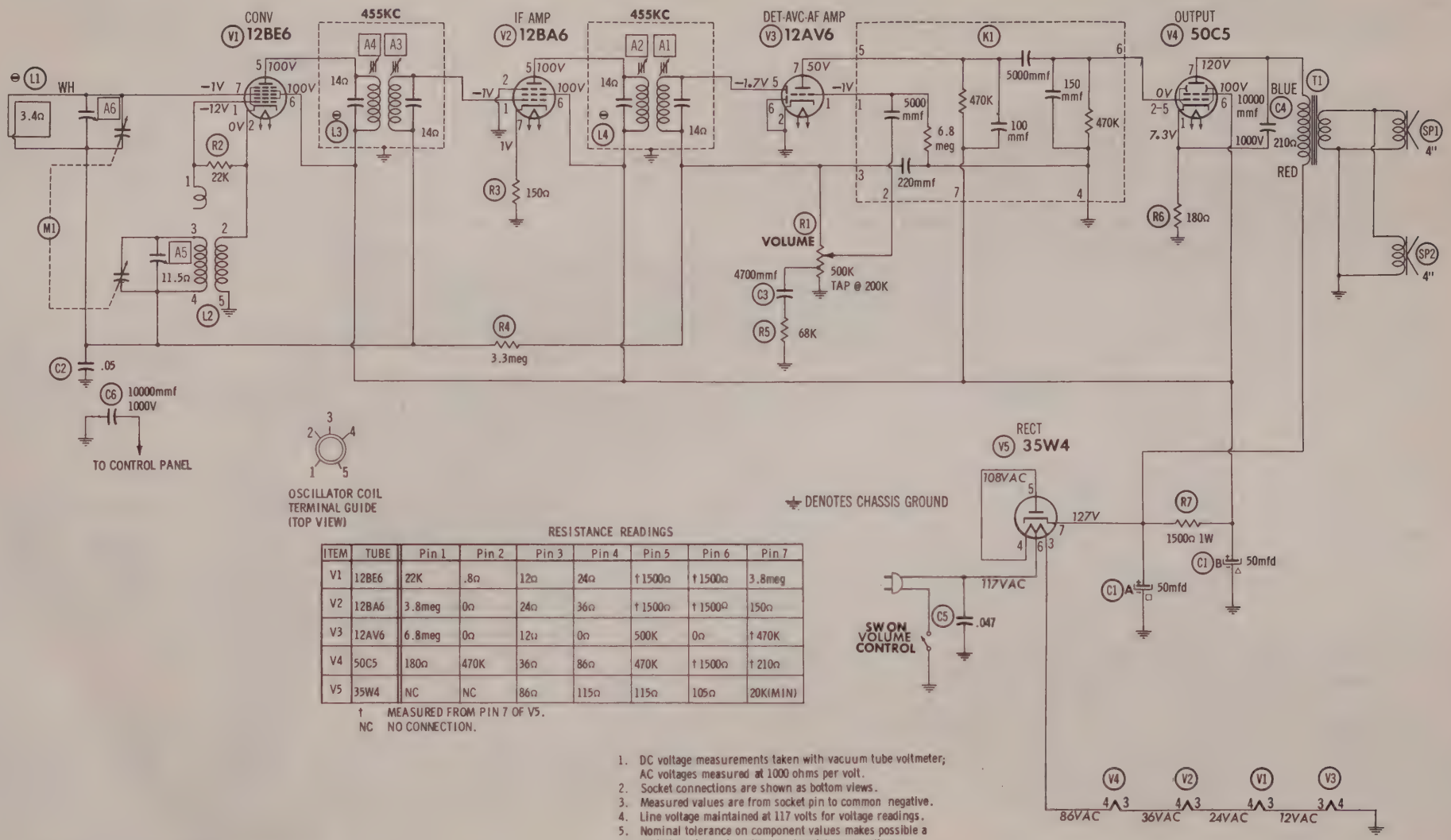
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial Pointer	558V098H01	
Knob	550V035H02	Tuning & Volume
Cabinet	513V018H15	Ivory, Model H-435T5A
Cabinet	513V018H16	Tan, Model H-437T5A
Cabinet	513V018H17	Green, Model H-438T5A

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord (Interlock Type) ..... Use BELDEN No. 8874



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	.8Ω	12Ω	24Ω	†1500Ω	†1500Ω	3.8meg
V2	12BA6	3.8meg	0Ω	24Ω	36Ω	†1500Ω	†1500Ω	150Ω
V3	12AV6	6.8meg	0Ω	12Ω	0Ω	500K	0Ω	†470K
V4	50C5	180Ω	470K	36Ω	86Ω	470K	†1500Ω	†210Ω
V5	35W4	NC	NC	86Ω	115Ω	115Ω	105Ω	20K(MIN)

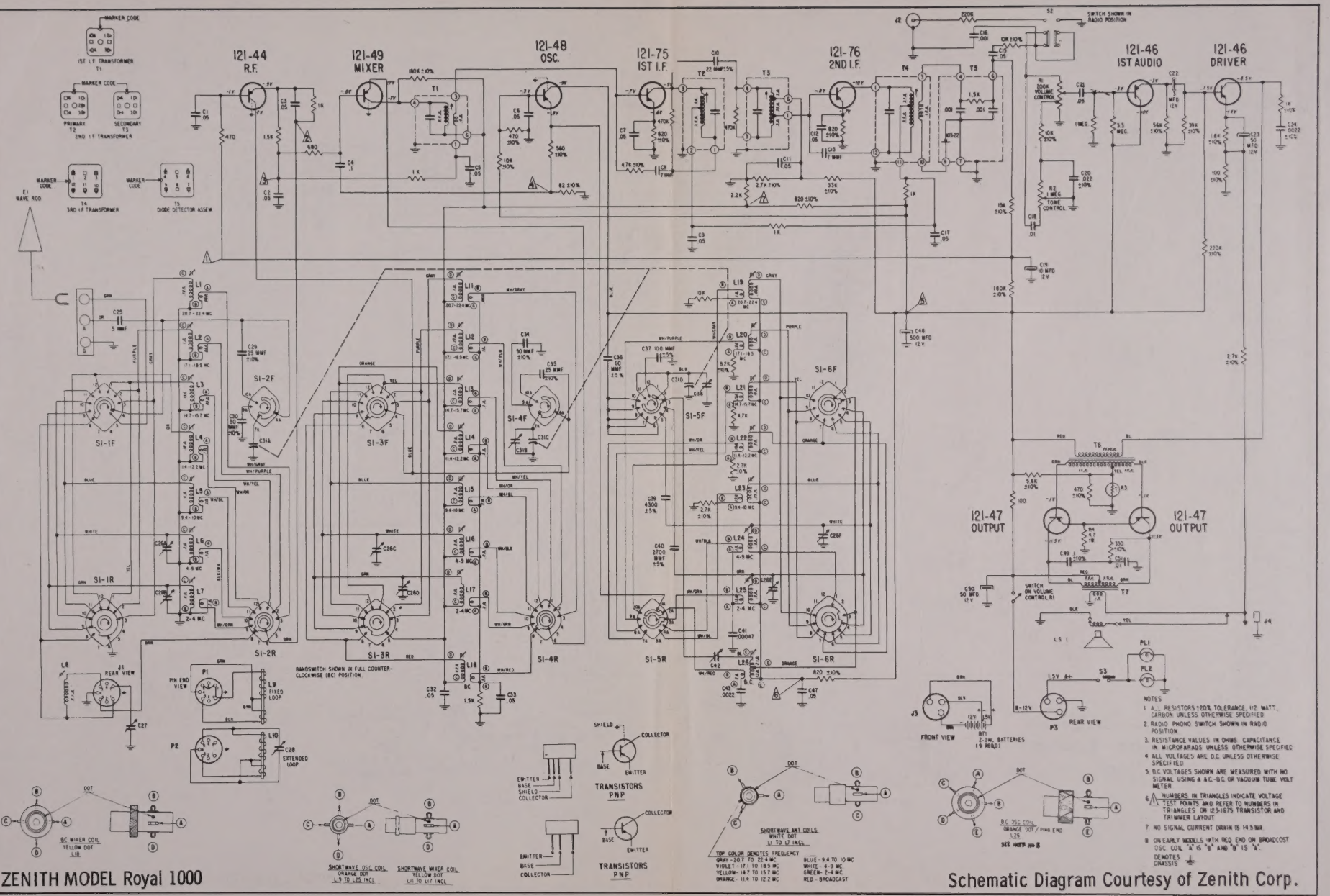
† MEASURED FROM PIN 7 OF V5.
NC NO CONNECTION.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

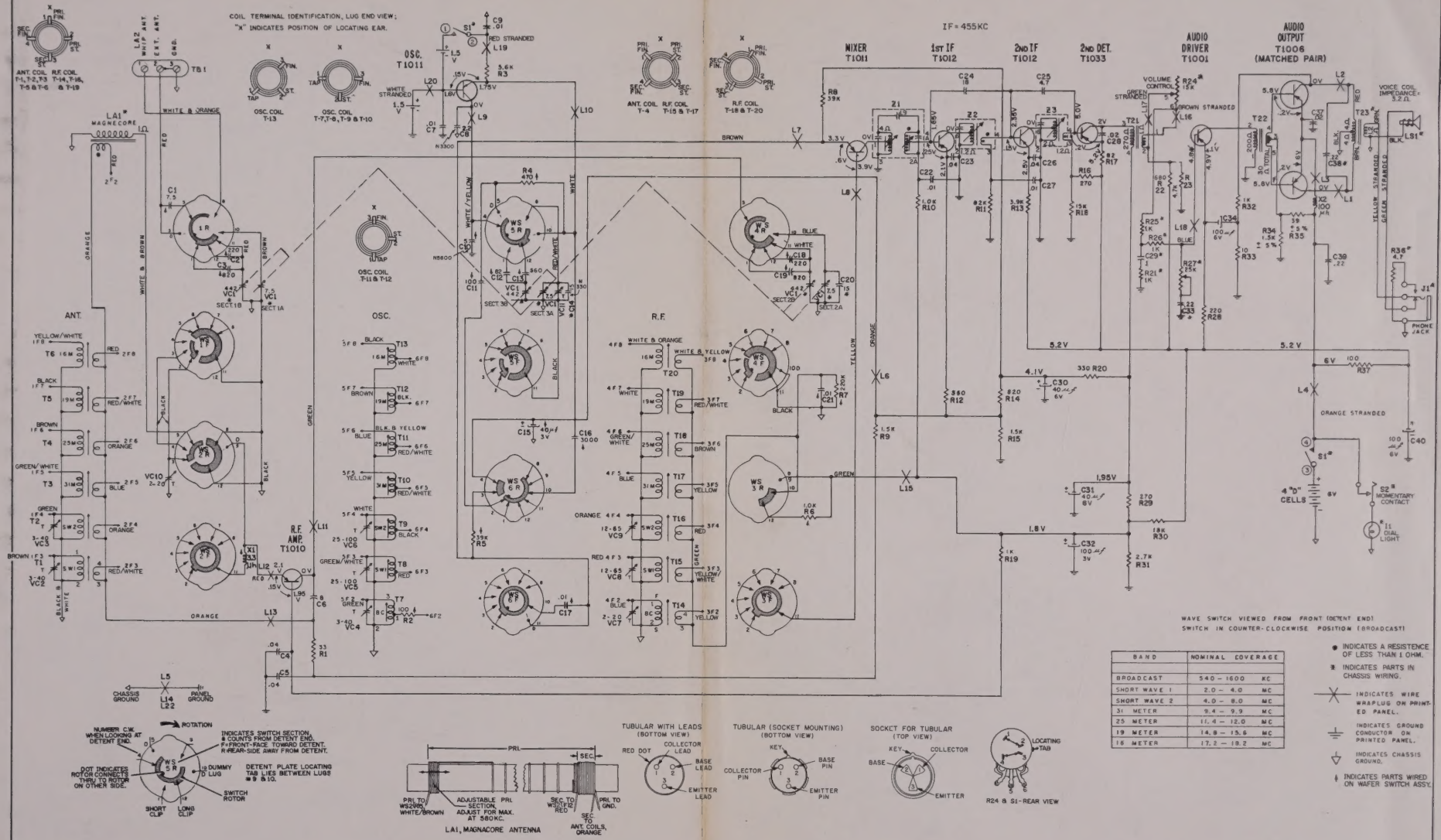
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC
Howard W. Sams & Co., Inc. 1958


121-44
R.F.
121-49
MIXER
121-48
OSC.
121-75
1ST I.F.
121-76
2ND I.F.
121-46
1ST AUDIO
121-46
DRIVER
121-47
OUTPUT
121-47
OUTPUT
SI-1F
SI-1R
SI-2F
SI-2R
SI-3F
SI-3R
SI-4F
SI-4R
SI-5F
SI-5R
SI-6F
SI-6R
1ST I.F. TRANSFORMER T1
2ND I.F. TRANSFORMER T2 T3
3RD I.F. TRANSFORMER T4
DIODE DETECTOR ASSEM T5
WAVE ROD E1
SWITCH SHOWN IN RADIO POSITION
BANDSWITCH SHOWN IN FULL COUNTER-CLOCKWISE (BC) POSITION
SWITCH ON VOLUME CONTROL R1
REAR VIEW
FRONT VIEW
TRANSISTORS PNP
TRANSISTORS PNP
BC MIXER COIL YELLOW DOT L18
SHORTWAVE OSC COIL ORANGE DOT L19 TO L25 INCL
SHORTWAVE MIXER COIL YELLOW DOT L1 TO L7 INCL
SHORTWAVE ANT COILS WHITE DOT L1 TO L7 INCL
BC OSC COIL ORANGE DOT / PINK END L26
TOP COLOR DENOTES FREQUENCY
GRAY - 20.7 TO 22.4 MC
VIOLET - 17.1 TO 18.5 MC
YELLOW - 14.7 TO 15.7 MC
ORANGE - 11.6 TO 12.2 MC
BLUE - 9.4 TO 10 MC
WHITE - 4-9 MC
GREEN - 2-4 MC
RED - BROADCAST
NOTES
1. ALL RESISTORS ±20% TOLERANCE, 1/2 WATT, CARBON UNLESS OTHERWISE SPECIFIED
2. RADIO PHONO SWITCH SHOWN IN RADIO POSITION
3. RESISTANCE VALUES IN OHMS, CAPACITANCE IN MICROFARADS UNLESS OTHERWISE SPECIFIED
4. ALL VOLTAGES ARE D.C. UNLESS OTHERWISE SPECIFIED
5. D.C. VOLTAGES SHOWN ARE MEASURED WITH NO SIGNAL USING A A.C.-D.C. OR VACUUM TUBE VOLT METER.
6. NUMBERS IN TRIANGLES INDICATE VOLTAGE TEST POINTS AND REFER TO NUMBERS IN TRIANGLES ON 02-51675 TRANSISTOR AND TRIMMER LAYOUT
7. NO SIGNAL CURRENT DRAIN IS 14.5 MA
8. ON EARLY MODELS WITH RED END ON BROADCAST OSC. COIL "A" IS "B" AND "B" IS "A".
DENOTES CHASSIS

ZENITH MODEL Royal 1000

Schematic Diagram Courtesy of Zenith Corp.



BAND	NOMINAL COVERAGE	
BROADCAST	540 – 1600	KC
SHORT WAVE 1	2.0 – 4.0	MC
SHORT WAVE 2	4.0 – 8.0	MC
31 METER	9.4 – 9.9	MC
25 METER	11.4 – 12.0	MC
19 METER	14.8 – 15.6	MC
16 METER	17.2 – 19.2	MC

- ● INDICATES A RESISTENCE OF LESS THAN 1 OHM.
- * INDICATES PARTS IN CHASSIS WIRING.
- INDICATES WIRE WRAPLUG ON PRINTED PANEL.
- INDICATES GROUND CONDUCTOR ON PRINTED PANEL.
- INDICATES CHASSIS GROUND.
- INDICATES PARTS WIRED ON WAFER SWITCH ASSY.

PHILCO MODEL T-9

Schematic Diagram Courtesy of Philco Corp.